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FACULTY OF ECONOMICS

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Srovnání Londýnské burzy cenných papírů s Burzou cenných papírů New York

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1. Introduction
2. Characteristics of the main principles of the stock exchange markets
3. Description of the functioning of the New York Stock Exchange
4. Description of the functioning of the London Stock Exchange
5. Comparison of the Selected Stock Exchanges

6. Conclusion

Bibliography

List of Abbreviations

Declaration of Utilization of Results from the Bachelor Thesis

List of Annexes

Annexes

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The declaration

“Herewith I declare that I elaborated the entire thesis, including all annexes, independently.”

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Contents

1 Introduction	6
2 Characteristics of the Main Principles of the Stock Exchange Market	7
2.1 The definition of Stock Exchange Market.....	7
2.2 History of Stock Exchange.....	7
2.3 Functions of Stock Exchange	8
2.4 Trading in Stock Exchange.....	9
2.4.1 Trading System in Stock Exchange.....	10
2.5 Products and Service	12
2.6 Stock Indices	13
2.7 Stock Exchange Supervision.....	14
3 Description of the Functioning of the New York Stock Exchange (NYSE)	16
3.1 History of NYSE	16
3.1.1 Memorable events that closed the NYSE.....	16
3.2 Trading in NYSE.....	18
3.2.1 Trading System in NYSE.....	19
3.2.2 Transaction in NYSE.....	19
3.3 Securities Products in NYSE.....	22
3.3.1 Stocks	23
3.3.2 Bonds.....	25
3.3.3 ETFs	28
3.4 IPO	29
3.4.1 Listing Requirement.....	29
3.4.2 Listing Companies.....	32
3.5 Index in NYSE	34
3.6 Regulation and Supervision in NYSE	36
4 Description of the Functioning of the LSE.....	38
4.1 History of LSE	39
4.1.1 Memorable events in LSE	39
4.2 Trading in LSE.....	41
4.2.1 Trading System in LSE	41
4.2.2 Transaction in LSE.....	42

4.3 Securities in London Stock Exchange	44
4.3.1 Stocks	44
4.3.2 Bonds	45
4.4.3 ETFs	46
4.4 IPO	47
4.4.1 Listing Requirement	48
4.4.2 Listed Companies	49
4.5 Index in LSE	51
4.6 Regulation and Supervision in LSE	53
5 Comparison of the selected Stock Exchanges	54
5.1 History	54
5.2 Trading	54
5.2.1 Trading System	55
5.3 Number of listed companies and market capitalization	56
5.4 Securities Products	59
5.4.1 Stock	59
5.4.2 Bond	61
5.4.3 ETFs	61
5.5 IPO	63
5.6 Summary	63
6 Conclusion	66
Bibliography	67
List of Abbreviations	69
Declaration of Utilization of Results from a Diploma (Bachelor) Thesis	
List of Annexes	
Annexes	

1 Introduction

Financial markets are the places where financial instruments are bought and sold. They are the economy's central nervous system, relaying and reacting to information quickly, allocating resources, and determining prices.¹ Among markets in financial markets, stock markets are important parts. Like Greenspan said to his aide "I could readily stop talking about the stock market. But if I do, I will not be explaining how the process is working...There is no way to understand what is going on in this economy without reference to stock prices." B. Mark Smith (2004, p 4) Stock exchanges reflect the situation of stock markets. They afford platforms for individuals and firms to find financing for their activities.

The objective of this thesis is to make reader have a comprehensive understanding of New York Stock Exchange and London Stock Exchange. We'll see the differences between both exchanges. Then we can know the advantages and disadvantages over these two exchanges. At last, we'll expect the future development of these selected exchanges.

The first part of this thesis is characteristics of the main principles of the stock exchange market. It is focused on basic knowledge of stock exchanges including their history, transaction, securities, IPO, and regulation. In the following second and the third parts are description of the functioning of the New York Stock Exchange and London Stock Exchange. The description of these two parts is very specific. To make readers feel intuitively, we will use different types of graph. The last part which is also the most important part of the thesis is the comparison of w these selected exchanges. The comparison includes transactions, market capitalization, listed companies, securities and IPO.

¹ CECCHETTI, Stephen G. and Kermit L. SCHOENHOLTZ. *Money, Banking, and Financial Markets*. 3rd ed. New York: McGraw-Hill, 2011. P92

2 Characteristics of the Main Principles of the Stock Exchange Market

Exchanges as intermediaries play key roles in financial markets. Exchanges can enable the owners of financial instruments buy and sell them easily and with a very low transaction cost. At the same time, they disclose information about trading. The disclosure of information makes the owners of financial instruments know the market prices.

2.1 The definition of Stock Exchange Market

Exchanges are also called trading floors. They are specialized physical places for trading securities between buyers and sellers. Only members can be allowed to trade on exchange. Members could be firms or individual. It depends on the rules of Stock Exchange. But the same is that to be a member, they must buy a membership or seat, which is fixed by the exchange. And the price of a seat is determined by supply and demand. Only members can be allowed in to use the exchange facilities and systems to exchange or trade listed stocks. (Frank, Franco, 2009)

2.2 History of Stock Exchange

Securities have a very long history of development.

The initial appearance of an organized market for equities is in Roman Republic of the second century B.C. There were *societates publicanorum*, which are organizations of contractors and other services for the government of the Roman Republic. They divided their ownership into *partes*, or shares. Investors can buy these *partes* or shares. And three fundamental prerequisites had existed at that period. First, there was freely transferable capital. Second, people were reliable at that time. That is credit existed. Third, people were willing to take risk. Unfortunately, The Roman stock market eventually disappeared with the lapsing of Rome. Because the Christian feudal system ruled medieval Europe and Islam controlled large parts of Asia. Both of them hated to develop financial market.

However, the modern world of markets gradually appeared although very slowly. Small

change of financial market started to appear in a few small city-states on the Italian peninsula. Trading among merchants involved in more risk. Under the need to avoid risk, merchants began to use securities. While outside of the Italian peninsula, financial markets were adjuncts to the large trade fairs which were very popular among Western Europe since the eleventh century.

In the mid-sixteenth century, Antwerp as the leading financial center in West became the place for the first permanent stock exchange, or bourse.² While a lot of scholars consider the Amsterdam Stock Exchange, which was established in 1602 by the Dutch East India Company, as the oldest stock exchange in the world. Unfortunately, Spanish troops sacked the Antwerp in 1585 which resulted in decaying of the bourse.

In the late of 17th century London Stock Exchange was established. In the late of 18th century New York Stock Exchange was established. And in the late of 19th century Bombay Stock Exchange which is an Asia's first Stock Exchange in India was established.

2.3 Functions of Stock Exchange

Stock exchanges play an important role in financial markets in nowadays. We can see the importance of stock exchanges through their functions. Below are most important functions of stock exchanges. (Kai Liu, 2012)

Forming and notifying share prices

The prices of all kinds of securities are formed in the stock exchange because securities' selling and buying are carried out centralized in the stock exchanges. Adopting bilateral bid trading method, securities' prices are reasonable in terms of theory. And this kind of notification announces in the public in time and is seen as important parameter of the economy.

Collecting all types of social capital to invest

With a growing number of stocks listing in stock exchanges and the amount of transaction becoming bigger, more capital are attracted into stock investment to raise money for future development of company.

² Samuel Ricard defined "bourse" as a stock exchange in 17th century and explained that was the "meeting-place of bankers, merchants and businessman, exchange currency dealer and banker's agents, brokers and other persons."

Leading capital to reasonable direction

Stock exchange facilitates free movements of capital. Listed companies' economic situation is reflected by announcing securities' prices and information of companies. So the existence of stock exchanges optimizes allocation of capital. Making capital flows into the area where capital is most needed.

Establishing transaction rules

Fair transaction rules are the key to fair transaction. These rules mainly include the rules of listing and delisting, quotation competition, information disclosure and so on. The key distinction of different stock exchanges is differences of transaction rules. Even the same stock exchange can set various trading rules thereby forming market segments.

Maintaining trading order

There are no perfect trading rules. Even though there are, trading rules may be not executed well sometimes. Therefore, one of the core function of stock exchanges is to monitor listing companies and brokers to see whether they behaving in an uncompetitive manner.

Affording trading information

Securities' transaction depends on information which include information on listing companies and securities' trading. Stock exchanges have the responsibility to remind listing companies of disclosing information, to check the accurate of the information and to announce transaction situation in time.

Low transaction cost and promoting liquidity of securities

If there are no economic organizations like stock exchanges, investors have to transact like the way of barter. An investor has to find another one who want to do the opposite transaction with same amount and agreed price. However, this way of trading increases information asymmetry, the risk of default and decrease the speed of transaction. So the importance of stock exchanges emerges. Stock Exchange as an intermediary decrease information asymmetry and risk of default and increase transaction speed. So it can efficiently low transaction cost.

2.4 Trading in Stock Exchange

To view market activity in a more complete way, we divide share trading value into three categories according to the facility used to execute the trading operation.

Electronic order book (EOB)

These trades represent the transfer of ownership affected automatically through the exchange's electronic order book where orders placed by trading members are usually exposed to all market users and automatically matched according to precise rules set up by the exchange, generally on a price/time priority basis.

Negotiated deals

This contains trades different from the EOB, confirmed through a system managed (directly or indirectly) by the Exchange, where both seller and buyer agree on the transaction (price and quantity). This system checks automatically if the transaction is compliant with the exchange rules, including most often consistency with EOB price.

Reported trades

This contains trades reported through a Trade Reporting Facility (TRF) when one of counterparty provides information on the trade and offers dissemination services at the request of the reporting trader. The other counterparty could use this facility if reporting is mandatory.

2.4.1 Trading System in Stock Exchange

There are two kinds of trading mechanism which are Quote-driven Market (market maker market) and Order-Driven Market (auction market).

Quote-Driven Market

In the quote-driven market³, market maker plays a very important role. The market maker as an intermediary uses a firm quotes bid and ask for investors. Investors can buy securities from market maker or sell to them. Investors don't need to wait to the counterparty to achieve the

³ <http://www.twse.com.tw/ch/products/publication/download/0001000471.pdf>

order. So natural buyers and natural sellers can't meet each other directly. The market maker facilitates trading in securities. The income of the market maker comes from difference between the price at which the dealer is willing to buy a financial assets and the price at which the dealer is willing to sell the same financial assets. The difference is called *bid-ask spread*. Investors buy securities from market maker at the price of bid and sell them to market maker at the price of ask. And a market maker takes no commission on the sale. There are two type of quote-driven market according to how many market makers are designed to each stock. One type is like NYSE. The common stock of each listed company could only have one designated market maker formerly known as "specialists" (It will explain in Chapter 3). But member firms can be a specialist for common stock of more than one company. The other type is like NASDAQ. Listed companies employ several different official market makers for one common stock.

Order-Driven Market

An order-driven market⁴ can be divided into continuous order-driven market or a periodic call auction market.

Continuous order-driven market is also called a continuous market or continuous auction market. Securities' prices in this market are determined continuously by orders submitted by buyers and sellers during the trading day. So the pattern of orders submitted to the market has decided the prices fluctuation.

Periodic call auction is also called auction market. Batched or grouped orders are executed at preannounced day. Any time during a trading day can carry out a periodic call auction. And whenever in periodic call auction market, the market clearing price will be "fixed" by the auction at a particular time of the trading day. It is important to mention that the word "fix" here doesn't contain any contemptuous meaning. It is just traditional expression. In a periodic all auction, prices are determined by a *price scan auction* or a *sealed bid auction*.

In a price scan auction, an auctioneer usually announces tentative prices to see the investors' reaction. The auctioneer wants to see the degree to which investors are willing to buy

⁴ See FABOZZI, Frank J. and Franco MODIGLIANI. *Capital Markets: Institutions and Instruments 4th ed.* New Jersey: Prentice Hall, 2009 PP125-126

or sell at each tentative price. Then the market-clearing price is formed via the balance between buy and sell orders.

In a sealed bid/ask auction, investor will submit trading their bid/ask price and trading quantities. All these information about prices and quantities will not be disclosed. Buy and sell orders are then cumulated according to the lever of price. For buyers, prices arrange from highest bid price to lowest bid price. Foy sellers, prices arrange from lowest prices to highest prices. When the cumulated buy orders equal the cumulated sell orders, the market-clearing price will be formed.

In fact, call auction market and continuous auction market are usually used with combination. Call auction market are used when the market is open or closed. And continuous auction market is used during the trading day. There are many stock exchanges using continuous auction during the trading day and call auction when the market is open and close such as NYSE Euronext, Shanghai Stock Exchange and so on.

2.5 Products and Service

Products and service are various in today's stock exchanges. There are several basic types of products: stock, bond, ETFs, option, future.

Stock

Stock represents the ownership of a corporation. A firm that issues stocks sells part of itself, so that the buyer becomes a part owner. There are two types of stocks: Common Stock and Preferred Stock. Common stock owners have the right to vote any distribution of earnings and capital. Preferred stock owners don't have the right to vote distribution of earnings and capital. But they have the priority of distribution of earnings. Stock markets are markets in which stocks are issued and traded. The secondary markets for corporate stocks are the most closely watched and reported of all financial security markets. This is because stock markets movements are seen as predictors of economic activity.

Bonds

Bonds are divided into government bonds, municipal bond, corporation bond and other

types of bonds. These three are typical bonds. Basically, bonds are liability to the bond issuers. Bondholders get the most priority of distribution of earnings even before preferred stock owners. They are two types of payments. One is that issuers pay coupon periodically and pay the principal on the maturity day. The other is that issuers repay principal and interest on the maturity day. But issuers pay nothing before maturity day.

ETFs

Exchange-Traded Funds (ETFs)⁵ are becoming one of the fastest growing investment products in the world. An ETF hold all kinds of assets which may include stocks, commodities, and bonds. Its price and yield are designed to correspond to the performance of an underlying benchmark index. ETFs can be traded on an exchange. Therefore ETFs combine the trading flexibility of individual stocks with the diversification benefits of index funding investing. ETFs can issue new shares and redeem existing shares on any trading day, in a process referred to as creation and redemption, which is open to qualifying entities that register as Authorized Participants (AP) with the fund. This mechanism allows an AP to exchange a portfolio of stock and receive ETF shares in return.

Options

An option is a contract in which the writer of the option gives the buyer of the option the right, but not the obligation, to purchase from or sell to the writer something at a specified price within a specified period of time. In return, the writer of the option get payments called option price or option premium. But when buyers decide to exercise the option, sellers must fulfill their obligation. In terms of exercising rights, there are two types of options: Call Options and Put Options. A call option is that buyers of option have the right to buy the underlying assets. A put option is that buyers of option have the right to sell the underlying assets. In terms of exercising date, there are American option and European option. American Option can be exercised any time before the maturity day. European Option only can be exercised on the maturity day.

2.6 Stock Indices

⁵ Source: NYSE <https://nyse.nyx.com/financial-literacy/all-about-investing/etfs>

To know of the fluctuation in stock value, we must master stock-market indexes which is also called stock index. We want to get a percentage changes in the index so that we can get a sense of change of stock values. Then we can invest in stocks which we think will bring us profits in the future or we can judge our money managers' or our performances after having invested in stocks. First, let's introduce two most important U.S. indexes, the Dow Jones Industrial Average and the Standard & Poor's 500 Index and then some other indexes.

The *Dow Jones Industrial Average* (DJIA) in the first stock-market indexes began in 1884. The DJIA is measuring the return of a portfolio which includes just one share of each stock in the index. And the DJIA is a *price-weighted average* which means higher prices' stocks have a higher weight than lower prices' ones. For example, there are two stocks-one with \$100 per share, the other with \$200 per share. Let's assume an investor have one share of each stock. If the first stock increases 30% which means the total value of these two shares increase \$30, or 10%, to \$330. If the second stock increases 30% which means the total value of these two shares increase \$60, or 20%, to \$360. At first, the DJIA had only 11 stocks. Now, as time goes by it has 30 stock prices. These 30 stocks come from the largest companies in the U.S., including information technology firms, such as Microsoft and Intel; retailing firms, such as Wal-Mart and Home Depot.

The *Standard & Poor's 500 Index* (S&P) has more stocks and use a *value-weighted index*. As the name suggest, it includes 500 biggest companies in the U.S. As to value-weighted index, it means shares in S&P receive weight according to its market capitalization. Let's assume the first company has \$1million shares. So the total market capitalization of the first company is \$100million. The second company has 2million shares. So the total market capitalization of the second company if \$400million. If the first firm's share price rises 30% which means the total value of these two companies increase \$30million, or 6%, to \$530million. If the second firm's share price rises 30% which means the total value of these two companies increase \$120million, or 24%, to \$620million. Price-weighted average and value-weighted index are different approaches emphasizing different points.

2.7 Stock Exchange Supervision

Stock market is one of the most highly regulated markets like other market in financial

markets such as insurance market and pension fund in the world. Generally speaking, each stock exchange has a two-tier regulation. First is under the regulation of stock exchange itself. Each stock exchange has their own rules to regulate issuers, investors and intermediaries. These rules must be strictly carried out. The second is under the supervision of authority which is central authority in charge of all financial markets. The supervision is designed to fulfill transparency and create a fair competition environment for all issuers, investors and intermediaries. And under the supervision, stock market can keep a fully functioning. The aim of a stock exchange is to provide issuers, intermediaries and investors with attractive, efficient and well-regulated markets in which to raise capital and fulfill investment and trading requirements. This aim highly depended on well regulation.

Even though general regulated structure is the same, different countries have different concrete legislation on supervision of stock exchange. US Federal Securities laws have established a relatively thorough system for the regulation of securities market and market participants. The first tier is NYSE Regulation, Inc. self-regulatory organizations. The second tier is SEC (This will be explained amply in Chapter 3). The London Stock Exchange is a Recognized Investment Exchange (RIE) under the supervision of Financial Services Authority (FSA) and it has its own Rulebook. The SIX Swiss Exchange's *Rule Book* governs the rights and obligations of SIX Swiss Exchange and its participants and traders. It is based on the principles of the Swiss Federal Act on Stock Exchanges and Securities Trading (SESTA).

Hong Kong's securities and futures markets is regulated by the Securities and Futures Commission (SFC). Chinese stock exchanges including Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange are based on the principle of self-regulation. At the same time, they are regulated by China Securities Regulatory Commission (CSRC).

3 Description of the Functioning of the New York Stock Exchange (NYSE)

NYSE (sometimes referred to as “the Big Board”) is the biggest stock exchange in the world by market capitalization. By the end of Dec 2011, its listed companies’ market capitalization has reached US \$14.39 trillion.⁶ The NYSE is operated by NYSE Euronext. The NYSE Euronext Holding Corporation was created on April 3, 2007 with the merger of NYSE Group, Inc., the world’s leading cash equities market, and Euronext N.V., the leading pan-European stock exchange. Today, NYSE has a great influence on American economy even on Federal Reserve policy decision.

3.1 History of NYSE

NYSE began when 24 stockbrokers sign the Buttonwood Agreement that would establish the rules for buying and selling bonds and shares of companies on May 17, 1792. At that time there was only five securities traded in New York and only one listed company which is the Bank of New York.⁷ Signers of the Buttonwood Agreement drafted their first constitution on March 8th, 1817, and named their nascent organization the New York Stock & Exchange Board. In 1863, the named New York Stock Exchange was adopted, which is known as the NYSE, one of the famous stock exchanges in the world. On April, 2005, NYSE merges with the already publicly-traded Archipelago electronic stock exchange. And this new company was called the NYSE Group, Inc. On April 4, 2007, the NYSE Group completed its merger with Euronext N.V, the European combined stock market, thus forming the NYSE Euronext, the first transatlantic stock exchange. In 2008, NYSE Euronext merges with American Stock Exchange.

3.1.1 Memorable events that closed the NYSE

⁶ Source: <http://www.world-exchanges.org/>

⁷ Source: http://www.loc.gov/rr/business/hottopic/stock_market.html

Usually the NYSE doesn't stop on working days except when holidays come. But in the history there are some days or several hours when the NYSE stopped during the working hours. Here we will highlight some notable events⁸ which make the NYSE stop trading suddenly.

World War One

Operations at the NYSE became stopped a month later after the assassination of Archduke Franz Ferdinand, sparking the half-decade and continent-spanning conflict in June 1914. Later, in November, bond trading reopened with price restrictions. A month passed, then restricted stock trading commenced. Normal operations resumed in April 1915. Here, crosses at Notre Dame de Lorette's World War I military cemetery in Ablain-Saint-Nazaire, northern France.

False Armistice Report

On November 7, 1918, United Press announced exciting news through a cable: GERMANY GIVES UP, WAR ENDS AT 2 P.M. People are so excited that they close the NYSE at the same time. However, the media made a joke to Americans. What actually happened was that German delegates were going to cross the front lines to meet with Allied commanders to negotiate an armistice. World War I ended after four years.

Black Monday Aftermath

A one-day recovery on Wednesday, Oct. 30, did little to staunch the bleeding. Earlier that week, from Monday to Tuesday, the Dow Jones industrial average mounted historic losses, still the worst plunge in history. The ticker did not stop running until 7:30 p.m. on that Tuesday because of the day's massive trading volume. NYSE closed at 2 p.m. on Oct. 31 to allow firms to catch-up. Today, stock ticker from the day of the 1929 stock market crash is displayed at the Museum of the City of New York.

Black Monday

Stock Market crash in Asian markets spread to Europe and America. It remains the largest one-day loss⁹ (by percentage) in the Dow's history (not accounting 1914. The NYSE closed more

⁸Source: www.forbes.com

⁹Source: www.wsj.com

than 4 months during World War I). The DJIA index fell 22%, 508 points on Oct. 19--a period so bleak that it's now called Black Monday. From Oct. 23 to 30, heavy volume forced the NYSE to end days earlier, at 2 p.m.

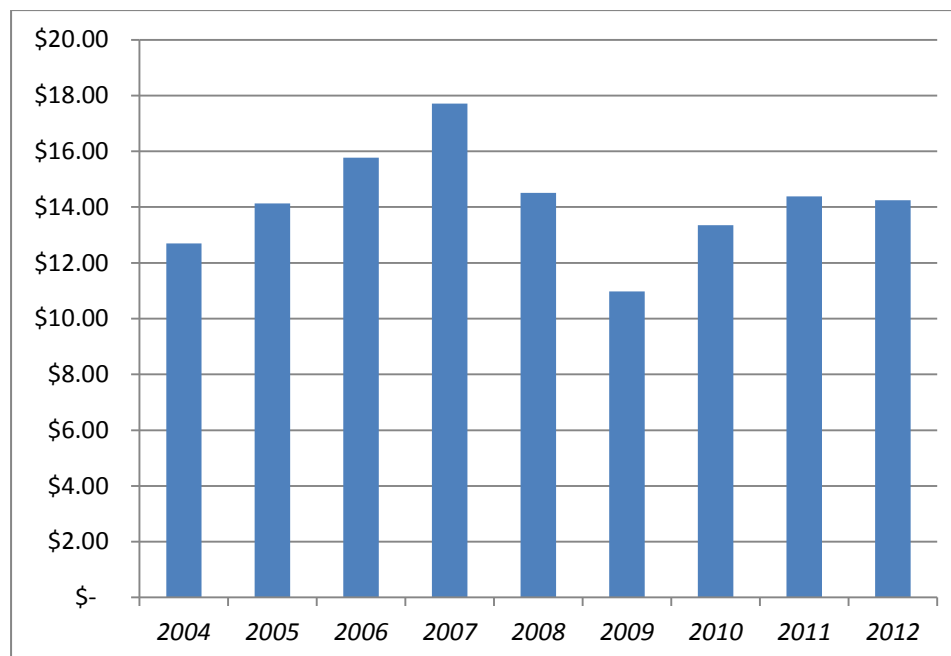
9/11 Terror Attacks

On September 11, 2001, terrorists hijacked passenger airliners and made them fly into buildings in suicide attacks. This action destroyed the Twin Towers and cost more than 3000 lives. It brought a pause to U.S. financial system.

3.2 Trading in NYSE

NYSE provides issuers, investors and intermediaries with a well-regulated, faster trading platform to trade securities. Investors have a broad range of securities which they can invest according to their wishes. And it is the largest stock exchange in the world by market capitalization of its listed companies at U.S\$14.39 trillion (see Bar Chart 3.1 below) in Dec. 2011. NYSE is open from Monday through Friday 9:30 a.m. to 4:00 p.m. Eastern Time Zone.

Bar Chart 3.1 Market Capitalization of listed companies (\$trillion)



Source: NYSE data, author

3.2.1 Trading System in NYSE

Before to 2006, the NYSE was a pure order-continuous market. Such a market is also called a continuous market or continuous auction market. In this type of order-driven market, prices are determined continuously throughout the trading day's orders submitted by buyers and sellers. There is the other type of order-driven market. It is called periodic call auction or auction market. In this type of order-driven market, grouped orders execute at preannounced times. Today NYSE-Euronext uses both of them to trade. For example, the NYSE-Euronext starts trading with a call auction and use continuous auction market during the trading day. (Frank, Franco, 2009)

At the exchange, posts are auction sites where orders, bids, and offers arrive. A specialist who is the market maker for each stock stands around posts to trade. Most orders in NYSE arriving from floor brokers are via SuperDot before July 1, 2009. SuperDot is an electronic system to route market orders and limit orders from investors or their agents to a specialist's post located on the floor of the exchange. And it is synonymous with electronic trading for 33 years. After July 1, 2009, NYSE has reduced time it takes to execute an order, with the implementation of the NYSE Super Display Book System (SDBK) for processing orders. As a result, NYSE customers are experiencing trade executions and reports within five milliseconds, as well as order and cancellation acknowledgments in just two milliseconds.¹⁰

3.2.2 Transaction in NYSE

A *specialist* is a market maker stands around posts to trade for each stock. Specialists are appointed to execute auction process and to keep an orderly market in designated stocks. They play roles as a broker or a dealer. As a broker, they trade orders from their customers in their designated stocks when these orders show on their post electronically. Or sometimes floor brokers can leave orders with specialists when floor brokers will be in charge of many other others. Specialists execute these orders when the price of stock reaches certain level specified by customers. As a dealer, specialists buy shares and put them in their own inventory and sell shares from the inventory. Specialists at the NYSE are employed by seven firms. Listed companies on exchange will interview employees of the specialist firms to see out suitable people who can

¹⁰ Source: NYSE. Link: <http://www.nyse.com/press/1246442836537.html>

represent these companies. These seven NYSE specialist firms include Bear Wagner Specialist LLC, Fleet Specialist, Inc, LaBranche & Co., LLC, Performance Specialist Group, LLC, Spear, Leeds & Kellogg Specialists LLC, SIG Specialists, Inc, Van der Moolen Specialists USA, LLC.

¹¹ *Commission broker* is the largest membership category in NYSE. A commission broker is employed by brokerage houses. Commission brokers execute orders for their firms on behalf of customers. They get commission which is agreed before.

Independent floor broker executes orders coming from other exchange members who have so many orders that they can't handle them alone. ¹²Almost all NYSE floor broker trade on an "agency" basis, meaning they don't trade for themselves or their firms like market-makers do. ¹³ A floor broker's clients can include banks, broker-dealers, hedge funds, mutual funds, pension funds, and traders and even some high net-worth individuals. Floor brokers let their clients know market rumors and find liquidity from the other hundred or so floor brokerage shops.

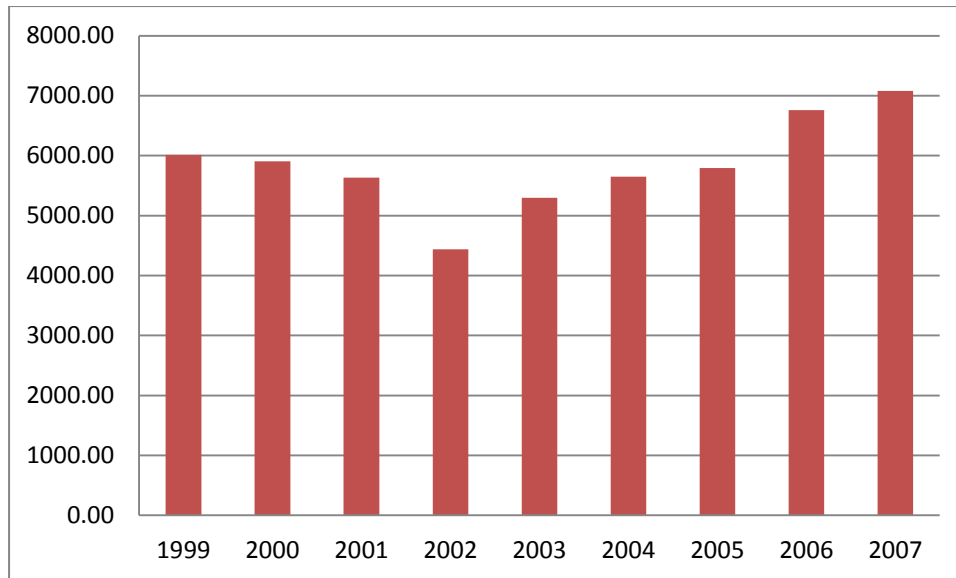
Because NYSE provides issuers, investors and intermediaries with a well-regulated, faster trading platform to trade securities, many companies including well-known companies choose NYSE.

Bar Chart 3.2 Fifty leading Stocks in Market Capitalization (\$thousand)

¹¹ Quote: <http://www.investopedia.com/ask/answers/04/060304.asp>

¹² Some scholars have the same opinion with Frank J. Fabozzi, Franco Modigliani. Some scholars think floor brokers are independent members of an exchange who can buy or sell any listed stocks to any investors

¹³Quote from an anonymous floor broker in *Business Insider*. Link: <http://www.businessinsider.com/heres-what-a-nyse-floor-broker-does-2012-10?op=1>

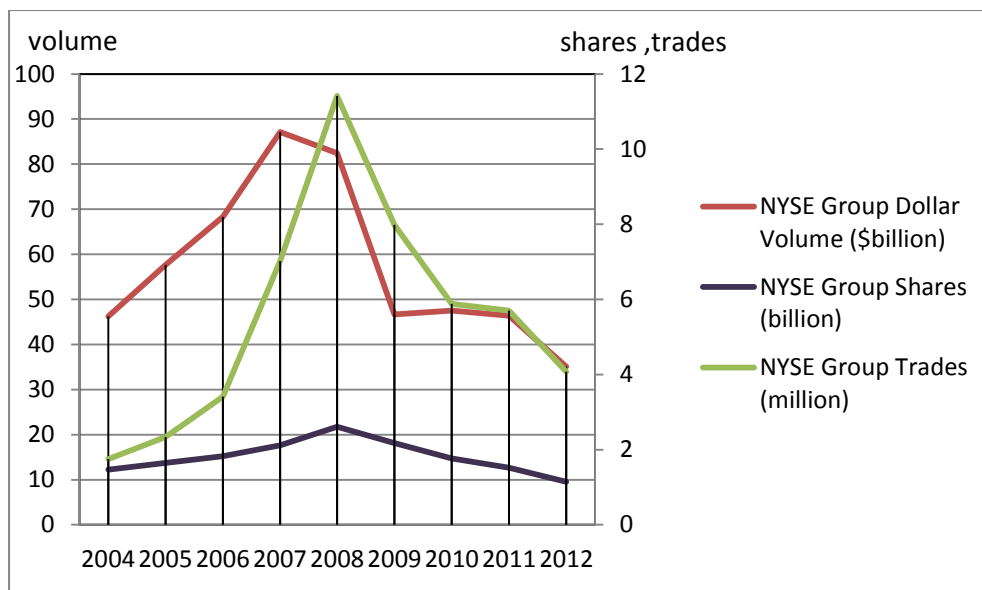


Source: NYSE data, author

Bar Chart 3.2 is fifty leading stocks in market capitalization. From 1999 to 2002, there is a decreasing trend. The year 2002 is a turning point. After 2002, total value of market capitalization started to grow.

Curve Graph 3.1 is NYSE Group Volume in NYSE Listed. From this curve we can see there is a big turning point in 2007. After 2007, dollar volume plunged in next two years. At the same time, NYSE Group Trades followed the NYSE Group Dollar Volume in 2008. It is Subprime Crisis that hit the market which resulted in slow development of the world's economy. And the influence of Subprime Crisis is huge. Because even in 2012, NYSE Group Dollar Volume still can't catch up the pre-crisis level.

Curve Graph 3.1 NYSE Group Volume, Shares and Trades in NYSE Listed



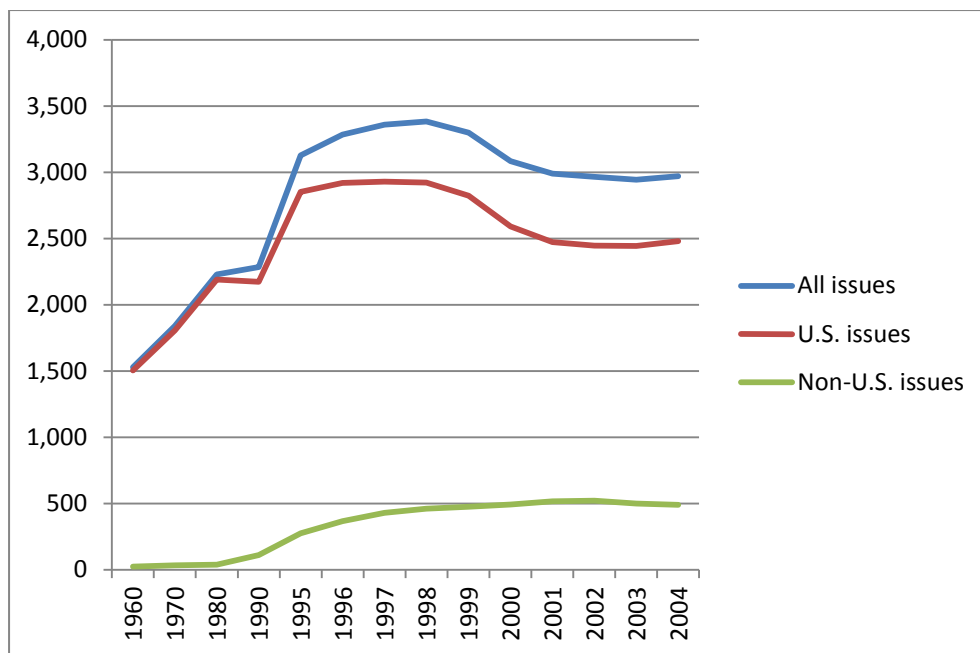
Source: NYSE data, author

3.3 Securities Products in NYSE

NYSE as the world's largest stock exchange by market capitalization of its listed companies, it provides a broad range of products for its customers, such as stocks, bonds, Exchange Traded Products (ETPs) and so on. Investors can invest any of them according to their wishes.

We can find the number of all issues, U.S issues and Non-U.S issues from 1960 to 2004 in Curve Graph 3.2. The curve “All issues” is sharp increase from 1990-1995. After 2008 when all issues reached the peak, numbers of all issues slowly decreased. The trend of all issues is the same as U.S. issues. However, Non U.S. issues continuously slightly increase. And the number of Non U.S. issues is much smaller than U.S issues. So the U.S. issues contribute to all issues to a great extent.

Curve Graph 3.2 NYSE issues



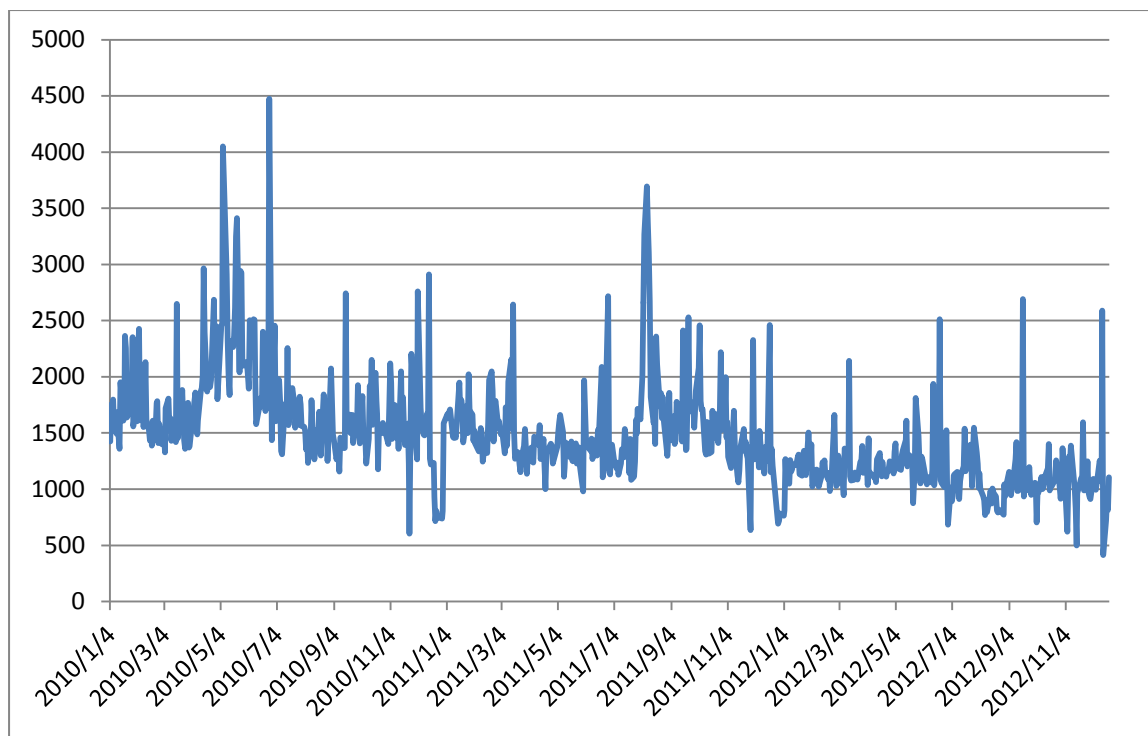
Source: NYSE data, author (includes all issues (common, preferred and warrants) except derivatives; year-end, except for current year through end of June)

3.3.1 Stocks

Curve Graph 3.3 is daily NYSE Group shares in stocks. The curve is volatile. Generally there is a decreasing trend on daily NYSE Group shares over these 3 years. It reflects that stock is highly risky for investors. But, high risk comes along with high yield.

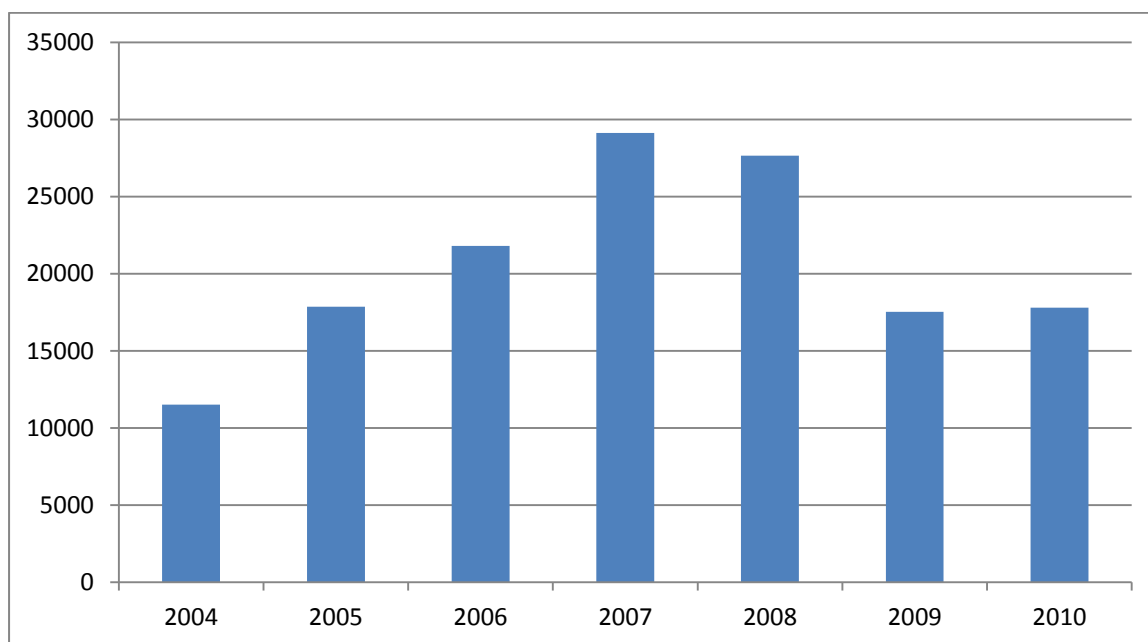
Bar Chart 3.3 is shares electronic turnover. Electronic turnover is main part for the share trading value. This Bar Chart shows us NYSE shares electronic turnover increase from 2004 to 2007 and decrease after 2007. And after 2009, it started to increase again.

Curve Graph 3.3 Daily NYSE Group Shares (million)



Source: NYSE data, author

Bar Chart 3.3 Shares Electronic Turnover (\$Billion)



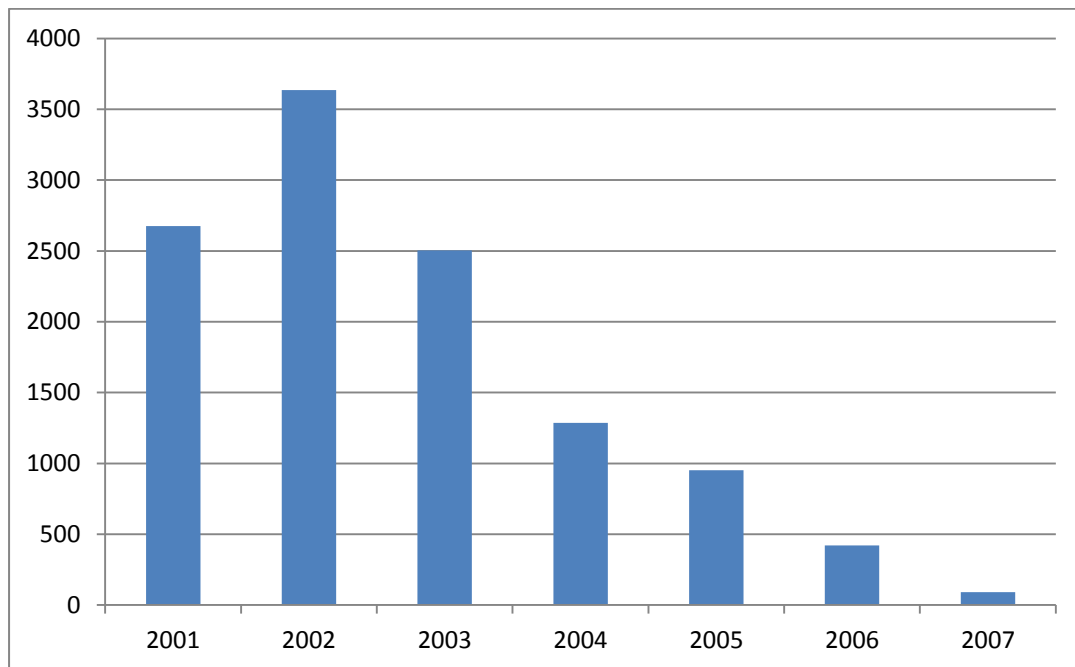
Source: World Exchange of Federation data, author

3.3.2 Bonds

NYSE provides offers investors a broad selection of bonds issued by U.S. and foreign companies, the U.S. government, foreign governments, municipalities and international banks. And it is the largest centralized corporate bond market in the U.S.

All NYSE bonds can trade through Automated Bond System (ABS). With this fully automated trading and information system, subscribing firms can trade bonds directly through terminals in their offices. It displays immediate market data for subscribers. And it also affords subscribers trade reports and locked-in trade comparison.

Bar Chart 3.4 Bond Value of Trading (\$million)



Source: World Exchanges of Federation data, author

Through graph below, we can clearly find a trend of decreasing in No. of trades.

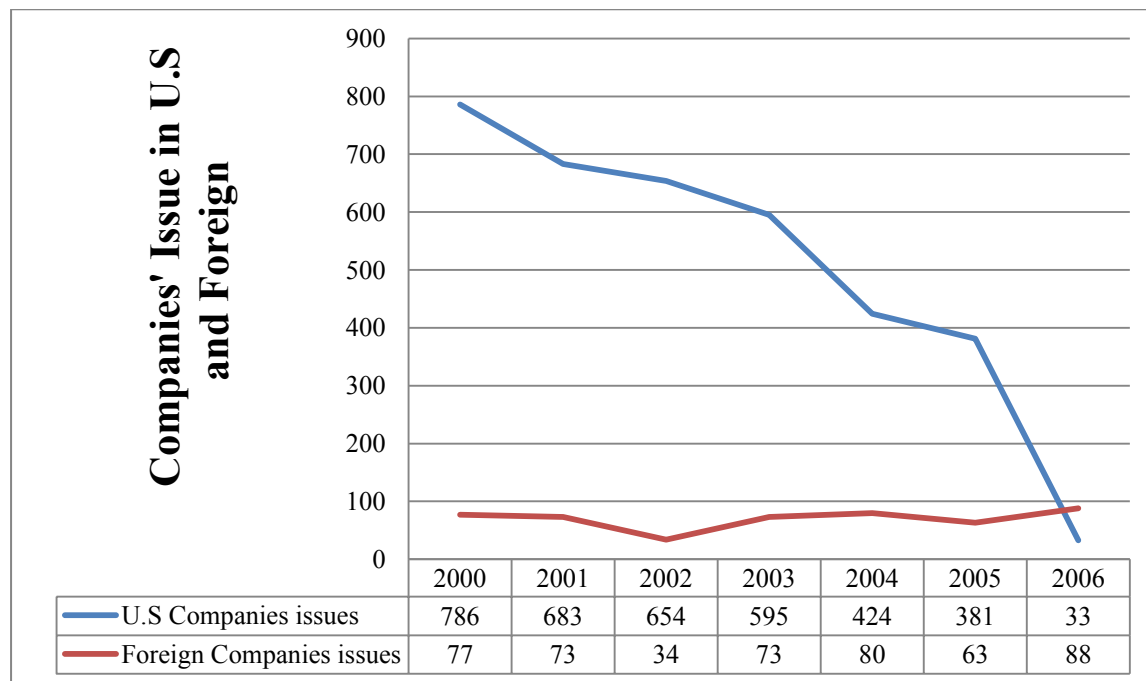
Curves below are listed bonds on NYSE by U.S and foreign companies, the U.S. government, foreign government, and international bank at year end. (All information in figures comes from NYSE Market Data)

In Curve Graph 3.4 we can see U.S domestic companies had an absolutely advantage over foreign companies in issues before 2006. From 2000 to 2006, the number of issues in U.S companies kept decreasing. However, foreign companies' issues relatively kept stable. At year 2006, there is an intersection point between two curves.

Curve graph 3.5 is comparison between U.S government issues and foreign government issues. Like U.S companies issues, U.S government issues also experienced decrease over these years. And U.S government issues also had an absolutely advantage over foreign government issues. But they didn't have an intersection. Since foreign government issues in NYSE is less than 10.

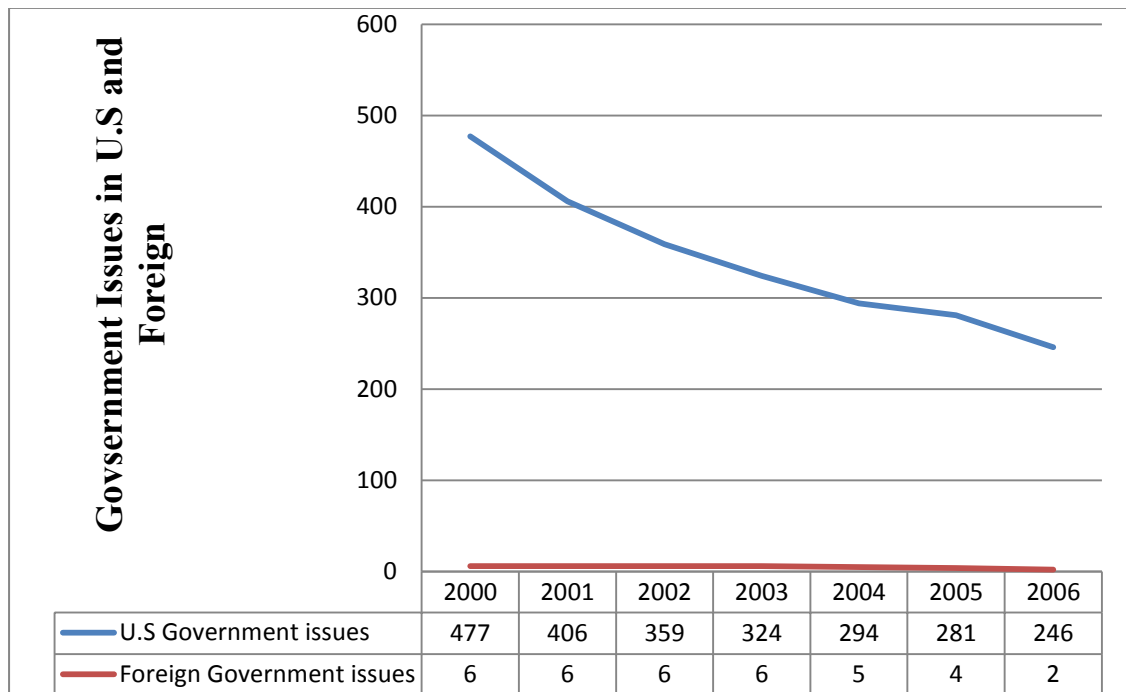
For international bank, whether number of issuers, number of issues and par value, they decreased during years from 2000 to 2006. Because these three items are associated with each other, it didn't make us surprised that they decreased together.

Curve graph 3.4 U.S Companies' Issues between U.S and Foreign



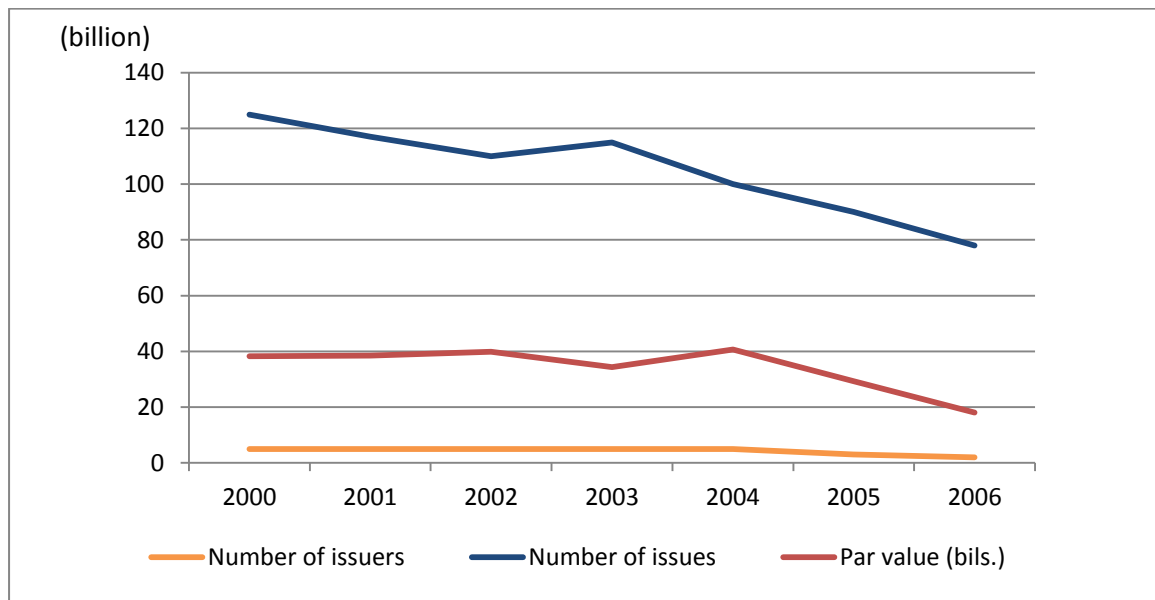
Source: NYSE data, author

Curve graph 3.5 Government's Issues between U.S and Foreign



Source: NYSE data, author

Curve graph 3.6 International Bank



Source: NYSE data, author

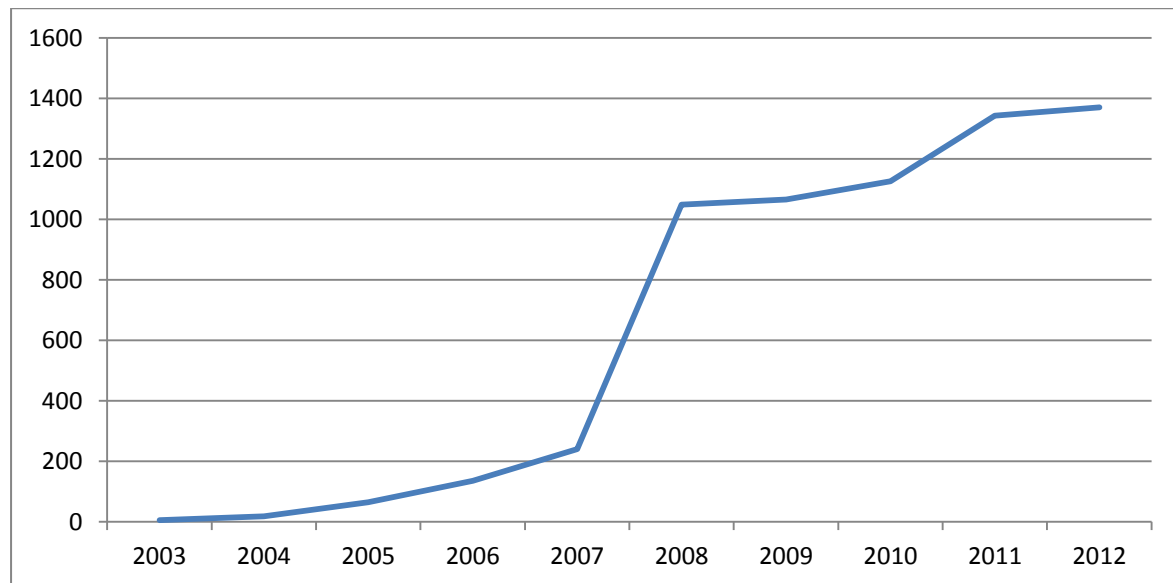
An important finding about bond in NYSE is that all bonds no matter who issues were experiencing decrease over those years.

3.3.3 ETFs

NYSE Euronext is a world leader in ETF trading. It has over 1,000 primary ETF listings in the U.S. Total ETFs dollar volume in the U.S. account for about 30% of all issues on the consolidated tapes at the end of 2010. In Europe, ETFs listed on NYSE Euronext's European markets saw a 25% increase in assets under management compared to the end of 2009.

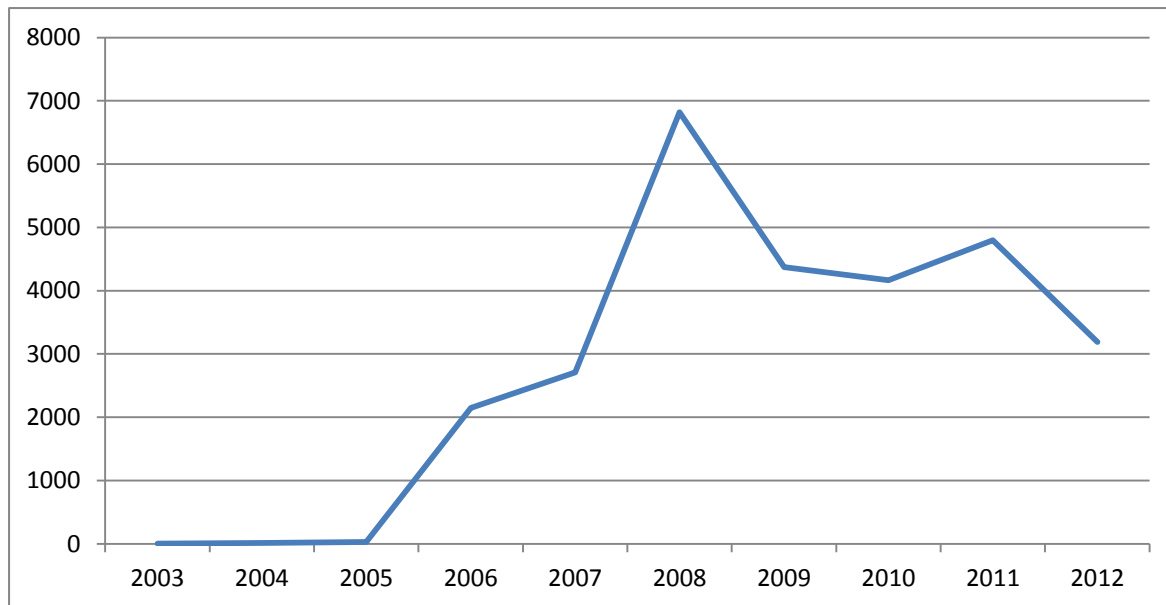
The number of ETFs listings surges these years, which we can see from Curve graph 3.7 Number of ETFs Listed. Like stock and bond, ETFs affected by the global financial crisis. The trading volume of ETFs reached the peak at the year 2008. In the following two years, it kept decreasing. In 2010, trading volume began to increase again. However, the increase ended when trading volume reached another small peak in 2011.

Curve graph 3.7 Number of ETFs listed



Source: World Exchanges of Federation data, author

Curve graph 3.8 Trading volume of ETFS (\$billion)



Source: World Exchanges of Federation data, author

3.4 IPO

NYSE Euronext's various markets offer multiple entry points to IPOs. There are four equity markets: the New York Stock Exchange, the world's largest cash equities market; NYSE Arca, a fully electronic exchange for growth-oriented enterprises; NYSE Euronext, the Eurozone's largest cash equities market; and NYSE Alternext, a pan-European market designed specifically for emerging companies.¹⁴ So companies which want to be listed can decide market they want to entry. NYSE Euronext which is the world's largest platform attracts a great numbers of companies wanting to go public. It set a series of strict requirement for those companies. However, there are still a lot of companies want to be listed in NYSE Euronext.

3.4.1 Listing Requirement

To be listed, firstly a company must apply. And then the NYSE will check the company whether meets the financial and distribution criteria. Tables below are standards for non-U.S companies. (For U.S companies standards see annex1)

Table 3.1 Worldwide and Domestic Standards on distribution

¹⁴ Quote from NYSE website Link: http://www.nyse.com/about/listed/lc_all_overview.html

Requirement	Worldwide	Domestic
Round-Lots Holders	5,000	A.400 U.S. round lot shareholders
Total Shareholders		B.2,200 total shareholders and 100,000 shares monthly trading volume (most recent 6 months)
		C. 500 total shareholders and 1,000,000 shares monthly trading volume (most recent 12 months)
Public Shares	2.5MM	1.1MM
Public Market	\$100MM	
IPO's, Carve-outs & Spin-offs	N/A	\$40MM
All other listings	N/A	\$100MM

(Note: Domestic companies have to meet either A, B or C if they want to go public)

Source: New York Stock Exchange Non-U.S. standards

Table 3.4.2 Worldwide and Domestic Standards on Financials earnings

	Worldwide	Domestic
Aggregate Pre-tax Income for last 3 years	\$100MM	\$10MM
Minimum Pre-Tax	\$25MM	\$2MM
Income in each of 2 preceding years		(all 3 years must be positive)
OR		
Aggregate Pre-tax Income for last 3 years	N/A	\$12MM
Minimum in the most recent year	N/A	\$5MM
Minimum in the next most recent year	N/A	\$2MM

Source: New York Stock Exchange Non-U.S. standards

A company who want to list must meet the requirement A. Valuation with Cash Flow Test or B. Pure Valuation Test.

Table 3.2 Valuation (revenue) Test Requirement

A. Valuation with Cash Flow Test		
Global Market Capitalization	\$500MM	\$500MM
Revenues (most recent 12-month period)	\$100MM	\$100MM
Aggregate Cash Flow for last 3 years	\$100MM	\$25MM
		(all 3 years must be positive)
Minimum Cash Flow in each of 2 preceding years	\$25MM	N/A
B. Pure Valuation Test		
Global Market Capitalization	\$750MM	\$750MM
Revenues (most recent fiscal year)	\$75MM	\$75MM

Source: NYSE Continued Listings Standards

Tables above are to be used for an initial evaluation only. Going public is a very complicated process. The NYSE will determine the suited standards for each company. But general standards are like tables above.

A company even after being listed, the NYSE may delist a company's stock if it no longer meets the NYSE requirements. (Stock may also be delisted after a merger with another company or by the choice of the company). Below are general requirements for a listed company to meet to avoid delisting.¹⁵ They are numerical criteria for capital and common stock. The fundamental requirement is that average closing price of a security is less than \$1.00 over a consecutive 30 trading-day period. For companies that listed under the Earnings standard and Asset & Equity standard, NYSE Euronext requires average global market capitalization over a consecutive 30 trading-day period is less than \$50 million and total stockholders' equity is less than \$50 million. Or average global market capitalization over a consecutive 30 trading-day period is less than \$15 million. For companies that listed under the Pure Valuation with Cash Flow standard, NYSE Euronext requires average global market capitalization over a consecutive 30 trading-day period is less than \$250 million and total stockholders' equity is less than \$20 million. Or average global market capitalization over a consecutive 30 trading-day period is less than \$75 million. For companies that listed under the Pure Valuation, NYSE Euronext requires average global market

¹⁵ Source: <http://usequities.nyx.com/regulation/listed-companies-compliance/continued-listings-standards>

capitalization over a consecutive 30 trading-day period is less than \$250 million and total stockholders' equity is less than \$20 million. Or average global market capitalization over a consecutive 30 trading-day period is less than \$75 million. For companies that listed under the Affiliated Company standard, they will not be subject to numerical criteria unless the parent/affiliated company no longer controls the entity or such parent/affiliated company itself falls below the numerical criteria.

3.4.2 Listing Companies

From Table 3.1, we can see an obviously increasing of U.S. Number companies and Total Number of companies from 1960-2004.

Table 3.3 NYSE Numbers of Listed Companies

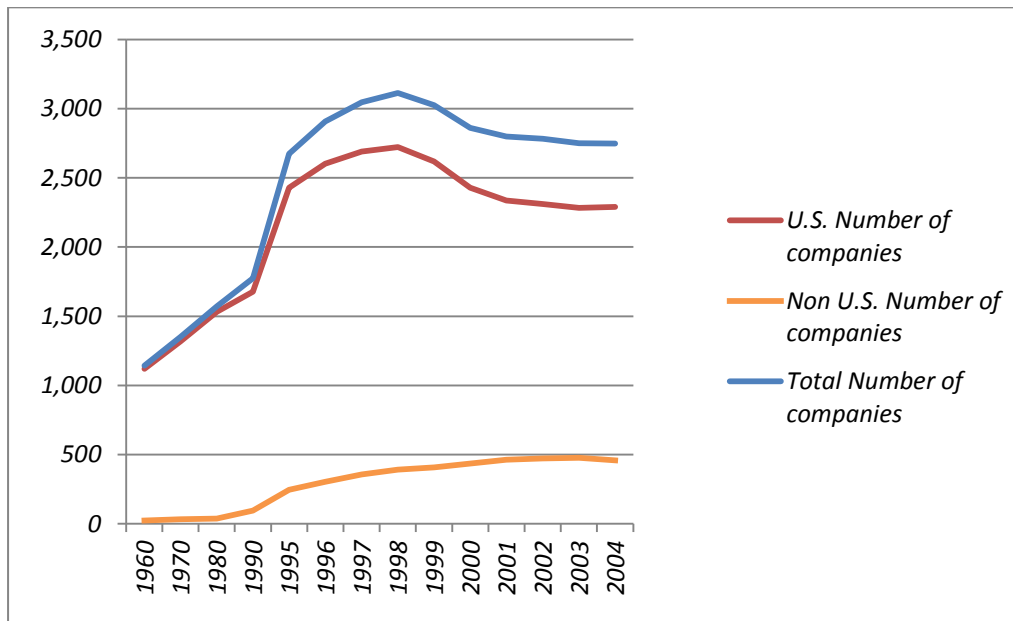
	U.S. Number of companies	Non U.S. Number of companies	Total Number of companies
1960	1,119	24	1,143
1970	1,318	33	1,351
1980	1,532	38	1,570
1990	1,678	96	1,774
1995	2,429	246	2,675
1996	2,603	304	2,907
1997	2,691	356	3,047
1998	2,722	392	3,114
1999	2,619	406	3,025
2000	2,428	434	2,862
2001	2,336	462	2,798
2002	2,310	473	2,783
2003	2,283	476	2,750
2004	2,289	458	2,747
2005	2,254	453	2,707
2006	2,313	451	2,764
2007	2,383	422	2,805
2008	3,097	410	3,507

Source: NYSE data, author (includes not just companies that list common stock but also companies that only list preferred stock)

Though **Curve graph 3.9**, we can see it clearly. The graph “Total numbers of companies” is sharp increase from 1990-1995. It indicates that many companies chose to go public during this

period. Though another two graphs, which are U.S. numbers of companies and Non U.S numbers of companies, we know U.S companies is the major contribution to this sharp change. After 2008 when total numbers of listed companies reached the peak, many companies delisted. It shows that a big event happened and it had a bad influence on U.S financial market. It is true. In 1997 Asian financial crisis severely hit the U.S financial market. The Dow Jones industrial plunged 554 points or 7.2%. Because of this, the NYSE stopped trading temporarily. Although numbers of all companies and U.S. companies decrease, there is a slight increase in numbers of Non U.S. companies. And the number of Non U.S companies in NYSE is much smaller than U.S. companies.

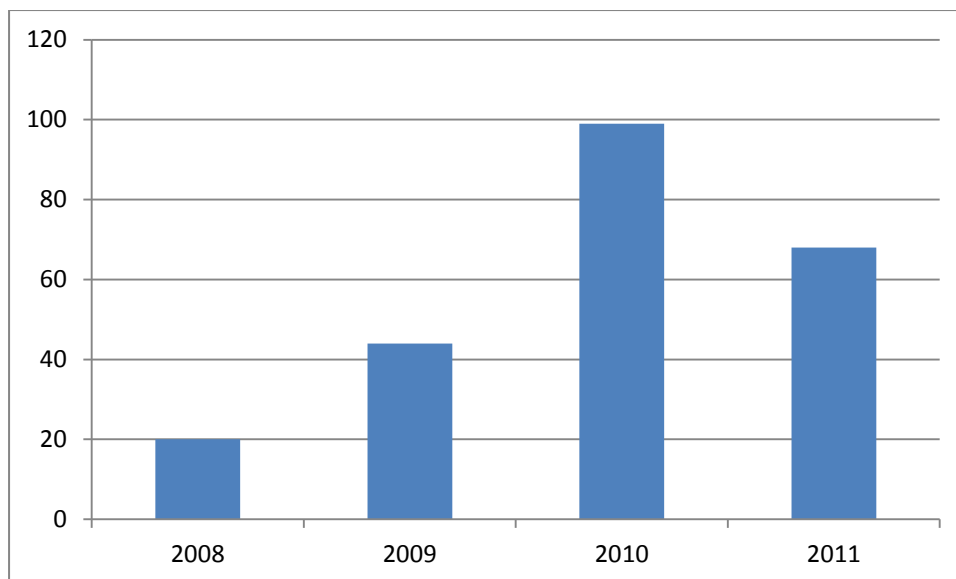
Curve Graph 3.9 Numbers of Listed Companies



Source: NYSE data, author

The trend of curves in Curve graph 3.2 NYSE issues is similar to Curve graph 3.9 NYSE Number of Listed Companies. It is not a coincidence. Issues are highly related with listed companies. That is the reason why these two graphs are similar.

Bar Chart 3.5 IPOs listings



Source: LSE data, author

Bar Chart 3.5 is IPOs listings in the NYSE. It seems that IPOs isn't affected by the Subprime Crisis beginning in 2008. From 2008 to 2010, the number of IPOs increased.

3.5 Index in NYSE

NYSE Euronext has many indices for different markets. In NYSE, there are several indices, such as: NYSE Composite Index, NYSE U.S. 100 Index, NYSE international 100 Index NYSE. They are very important indices for investors. And these indices' potential components have high quality, because NYSE has substantial listing standards with respect to company size, income and cash flow. We will start with these three important Indices in NYSE.

The *NYSE Composite Index*¹⁶ contains all common stocks listed on the NYSE. It has more than 1900 U.S. and Non U.S. stocks. It is a globally diversified index. The index's components are from 38 countries, 36% of them are from Non-U.S countries. It is also an index including 10 industries. So it is considered as Industry Classification Benchmark. All closed-end funds, ETFs, limited partnerships and derivatives are not included in the index after January 2003 when a new methodology was introduced. The index's calculation is based on price and total return and the index receives a weight equal to free-float market capitalization. Free-float market capitalization takes into consideration only those shares issued by the company that are readily available for

¹⁶ Source: http://www.nyse.com/pdfs/NYSEEuronext_CompIndex.pdf

trading in the market. Since some shares are directors holding, government holding, strategic holding and other kinds of holding.

Chart 3.1 NYSE Composite Index



Source: Yahoo Finance.

*NYSE U.S 100 index*¹⁷ contains 100 largest U.S. common stocks listed on the NYSE. The index is designed to assist investors looking to diversify their U.S. holdings across 10 industry sectors (as defined by Dow Jones). It records trading of the top 100 U.S stocks trading on the NYSE. Companies represented have a combined free float market capitalization of nearly \$7.3 trillion, covering 36% of the available market capitalization of all NYSE listed stocks. And it covers over 62% of U.S. companies listed on the NYSE. From these statistics, we can see the significant of NYSE U.S. 100. In fact, over the past five years, NYSE U.S 100 Index has a better performance than S&P 500 and S&P 100.

Unlike NYSE U.S 100 Index which tracks only top 100 U.S stocks trading on the NYSE and its holdings only across 10 industry sector, the *NYSE International 100 Index* tracks the top 100 non-U.S common stocks trading on the NYSE in the form of ADRs and its components are diversified across all economic sector. The total value of companies represented in NYSE International100 index is \$4.3 trillion in 2004. It is over a quarter of the total market capitalization of U.S companies. The NYSE International 100 Index is an ideal benchmark for

¹⁷ Source: <http://www.nyse.com/about/listed/nyid.shtml>

U.S. institutional investors who are restricted from purchasing foreign stocks, and for those who choose to use ADRs to obtain international diversification.¹⁸

Chart 3.2 NYSE U.S 100 index



Source: Yahoo Finance.

Chart 3.3 NYSE International 100



Source: Yahoo Finance.

3.6 Regulation and Supervision in NYSE

¹⁸ Source: <http://www.nyse.com/about/listed/nyiid.shtml>

US Federal Securities laws have established a relatively thorough system for the regulation¹⁹ of securities market and market participants. The first tier is NYSE Regulation, Inc. self-regulatory organizations. The second tier is SEC.

NYSE Regulation, Inc.

NYSE Regulation, Inc. is an independent not-for-profit corporation, dedicated to strengthening market integrity and investor protection (Defined by NYSE). NYSE Regulation oversees self-regulatory organizations responsibilities and functions. In fact, NYSE Regulation allocates its regulatory functions to Financial Industry Regulatory Authority (FINRA) and other self-regulatory organizations.²⁰ It sets forth its own rules and adopts its own acceptable and ethical business practices. All members of the NYSE, as well as any companies or individuals, who associated with NYSE members, must obey NYSE rules.

NYSE Regulation has also a responsibility for NYSE market surveillance to ascertain any illegal behavior of NYSE broker dealers and NYSE listed companies. NYSE Regulation Market Surveillance Division oversees trading abuses committed on the NYSE trading floor, as well as those committed by electronic trade. When the Market Surveillance Division finds any type of trading abuses, it reports them to the NYSE Regulation Enforcement Division, which further investigates abuse allegations.

The Enforcement Division investigates the abuse allegations and determines if a violation of NYSE rules has happened. If the Enforcement Division discovers a violation has happened, it will decide on disciplinary action against the violating party. The Enforcement division can also report these abuses to the SEC, which may then launch an independent investigation.

SEC

The SEC is the government body that oversees the regulation and operations of the NYSE. Accordingly, all rules and rule amendments proposed by the NYSE must be submitted to the SEC. And the decision is on SEC. The SEC does not, however, form new rules or rule changes. The formation of new rules and any rule changes are at the discretion of NYSE Regulation. The goal of the SEC is to create financial transparency for public companies in order to hold them

¹⁹ Source: http://www.ehow.com/about_7277239_regulates-new-york-stock-exchange_.html

²⁰ Source: <http://usequities.nyx.com/regulation/nyse-regulation/overview>

accountable for business and financial transactions. All public companies, including those that trade securities on the NYSE must file annual and quarterly financial reports with the SEC.

The Division of Trading and Markets, a component of the SEC, is responsible for the supervision of daily operations on all the U.S. stock exchanges, including the NYSE. The Division of Trading and Markets reviews and approves any rule changes and proposals for new rules that NYSE Regulations files with the SEC. The Division of Trading and Markets also performs market surveillance to identify illegal activities of NYSE broker-dealers or representatives of NYSE-listed companies, such as insider trading and market manipulation.

4 Description of the Functioning of the LSE

LSE which sites in the city of London is one of the most important financial institutions in the World. As of December 2011, the Exchange had a market capitalization of US\$3.266 trillion, making it the third-biggest stock exchange in the world by this measurement (and the largest in Europe).²¹

4.1 History of LSE

The LSE which can date back to more than 300 years is one of the oldest stock exchanges in the world. Even though starting business in a coffee house in 17th, the Exchange quickly and successfully grew to become the most important financial institution in London. Several centuries passed, the Exchange is still a pioneer of being an orderly and well-regulated stock exchange. Now, it is in the place which is the heart of the global financial community.

During the 17th century, stockbrokers were expelled from the Royal Exchange, which was founded by Thomas Gresham, due to their rude manners. They have to execute orders in another place. So they choose Jonathan's Coffee-House which is in the vicinity.²² 150 stockbrokers made up a club. And they use Jonathan's Coffee-House as their exclusive place to gather. In return they pay £1200 a year as rent.²³

4.1.1 Memorable events in LSE

There are several important events for the development of LSE.

Modern Stock Exchange is born

On 3, March 1801, subscription in the form of annual fees was created. The reason that subscription was introduced was that fraud was rife. To protect investors and avoid fraud dealings, subscription was created. The existence of subscription is a symbol that the first regulated exchange comes into existence in London, and the modern Stock Exchange is born.

World War One

²¹ Source: World Federation of Exchanges. *Market highlights for first half 2010*

²² Source: from LSE website Link: <http://www.londonstockexchange.com/about-the-exchange/company-overview/our-history/our-history.htm>

²³ See *The evolution of the rules and regulations of the first emerging markets: the London, New York and Paris stock exchanges, 1792–1914* PP.299

The Exchange market closed from the end of July in 1914 until the New Year due to outbreak of the Great War. And the Exchange also formed an army named The Stock Exchange Battalion of Royal Fusiliers. This is an army made up of 1600 volunteers.

World War Two

Operations at the Exchange became stopped at the start of the World War Two which was caused by German and continued 6 years from 1 September 1939. The Exchange was closed for 6 days and reopened on 7 September. The floor of the House closed 7 days when V2 rocket attacked the Exchange. Even in this terrible situation, trading continued in the basement.

“Big Bang”

In 1986 Margaret Thatcher’s government decides to deregulate the exchange. There are several important deregulatory measures:

- Outside corporation is allowed to have ownership of member firms;
- Dual capacity was adopted instead of the single capacity. Dual capacity is that market makers are authorized to trade shares on behalf of its clients, as well as for themselves;
- Fixed commission are abolished;
- Open outcry was replaced with computer and telephone communications among dealing rooms. Open outcry is the name of communication among brokers in stock exchange. Under open outcry trading was conducted verbally, face-to-face on a market floor. Because of this kind of change, the Big Bang is called disappearance of screaming crowds.

The Big Bang has a great influence on the Exchange. Deregulatory measures encourage competition among companies in financial industry. These measures make capital inject into the markets and companies and make the liquidity of capital better than ever. It leads the Exchange to globalization. And it successfully has transformed the city of London into a leading global financial center. There is no doubt that London is a preeminent global financial hub and the Exchange provides a wider variety of financial instruments and services at a lower cost to investors. Of course, another reason is that. The country sits perfectly between the Asia and US

time zones and few, if any, of the world's biggest banks and investment managers do not now have an office either in the Square Mile, Canary Wharf or Mayfair.²⁴

Change of regulatory authority

A Board of Directors takes the place of the governing Council of the Exchange. And members in the Board of Directors come from the Exchange's executive, customer and user base in 1991. And the name of the Exchange is named "The LSE" at that time.

Merging with Borsa Italiana

The Boards of Borsa Italiana S.p.A. ("Borasa Italiana") and LSE Group plc ("LSE") merged in 2007. The merger of Borsa Italiana and the LSE (the "Merger") creates the leading diversified exchange group in Europe and the platform for additional strong growth on a European and global scale.

4.2 Trading in LSE

The LES provides issuers, investors and intermediaries with a well-regulated, faster trading platform to trade securities. It is the third largest stock exchange in the world by market capitalization of its listed companies at U.S\$ 3.671 trillion in Dec. 2012. (See Bar Chart 4.1)

4.2.1 Trading System in LSE

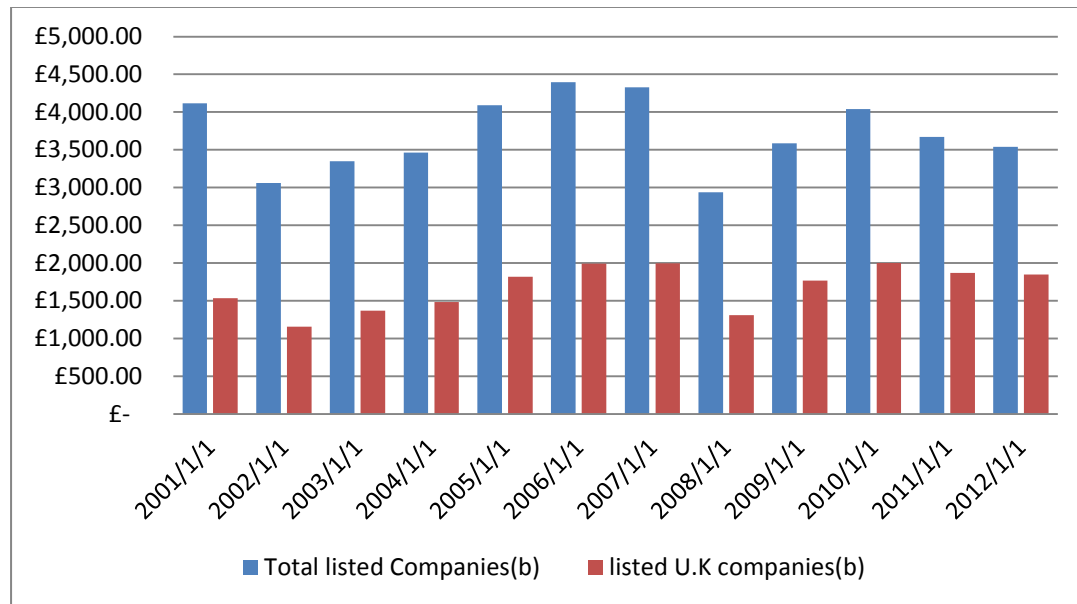
The LES switches its UK equities trading platform²⁵ to the Millennium system at the beginning of 2011. Because the old platform-TradElect-has gone through several high profile failures. The new platform is based on Linux and Unix environment and uses an Oracle database. For example, in September 2008, the LSE went through an about eight hour outage because of the old system. The disruption particularly significant that day given the FTSE 100 had already risen almost 200 points in early trading, with more than double the normal of shares changing hands, after details of the US Government's bailout of mortgage giants Fannie Mae and Freddie Mac. The new system is capable of executing trades in 124 microseconds. The LSE hopes to use

²⁴ Source: <http://www.efinancialnews.com/story/2011-10-12/big-bang-city-of-london-25-year-anniversary>

²⁵ Source: <http://www.computerworlduk.com/news/open-source/20382/linux-trading-system-to-save-london-stock-exchange-10m-a-year/>

new faster trading system to attract high-frequency trading firms. Since smaller competitors have gain market share for trading in UK equities such as Chi-X Europe and BATS Europe.

Bar Chart 4.1 Market Capitalization (\$billion)



Source: LSE data, author

4.2.2 Transaction in LSE

A high-frequency trading platform attracts a lot of traders without any doubt. Over 680,000 trades a day are executed on the LSE's markets, giving a daily average value traded of £36 billion. All of these cannot exist without good trading services. The LSE afford a series of trading services for domestic and foreign traders.

For domestic trading service, there are SETS, SETSqx, and SEAQ. *SETS* (Stock Exchange Electronic Trading Service)²⁶ is an electronic order book for securities with high liquidity, such as securities in FTSE 100, FTSE 250, FTSE Small Cap Index constituents, Exchange Traded Funds, Exchange Trading Products as well as other liquid AIM, Irish and London Standard listed securities. *SETSqx* (Stock Exchange Electronic Trading Service – quotes and crosses) is another electronic order book for securities. However securities in SETSqx are

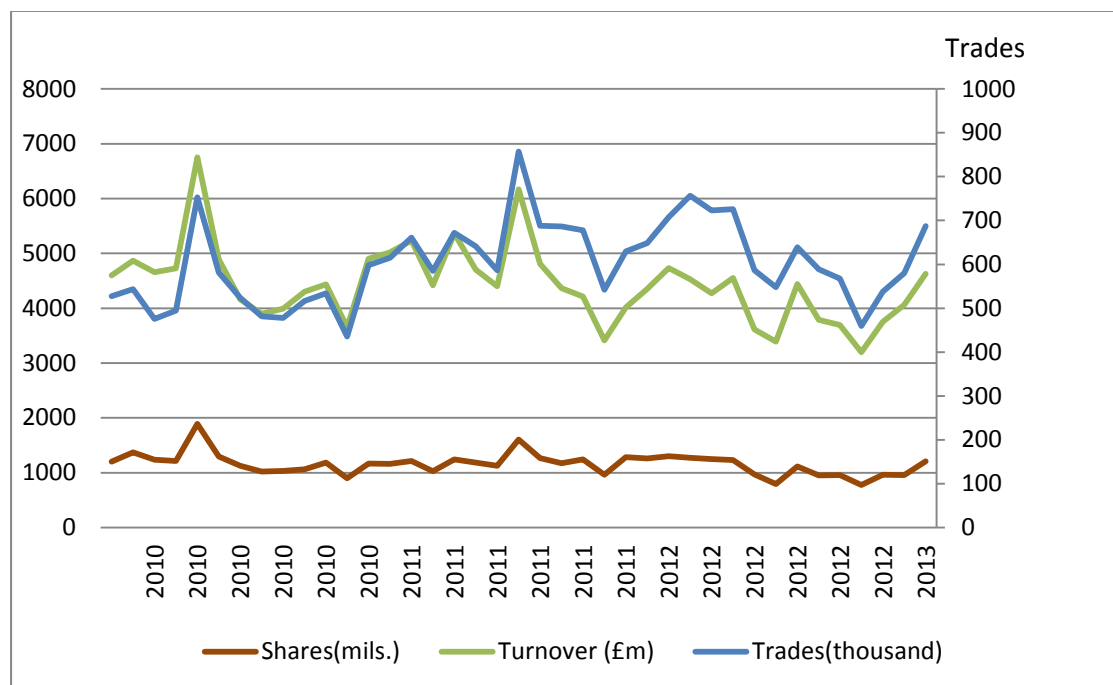
²⁶ Source: London Stock Exchange SETS

less liquid than securities in SETS. *SEAQ* is a non-electronically executable quotation service. Market makers use it to quote prices in AIM securities (not traded on SETS or SETSqx) and some fixed interest securities.

For international trading services, there is European Quoting Service, European Trade Reporting and so on. European Quoting Service (EQS) aims to make traders obey their pre-trade pan-European transparency obligations. All EU Liquid securities (excluding those traded on the SETS, SETSqx) are traded and reported on it. European Trade Reporting is a pan-European trade reporting service to ensure traders can follow the post-trade reporting obligations.

Curve graph 4.1 is daily trading for total book trading. From this curve, we can see that turnover of daily trading in the LSE always fluctuate around £4500 million.

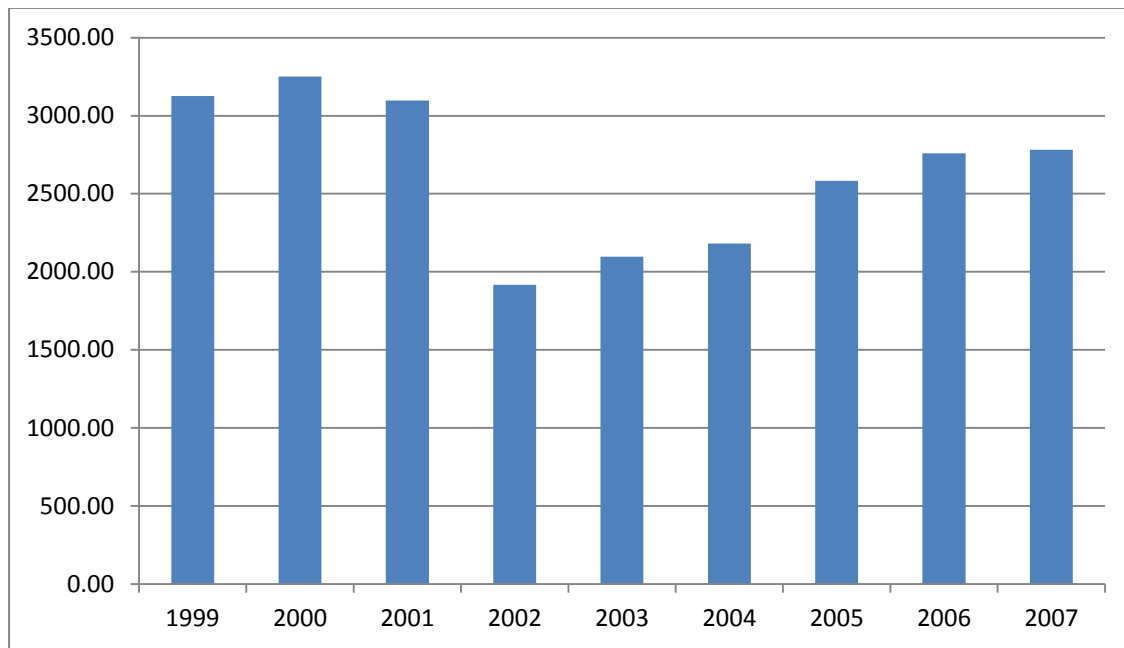
Curve graph 4.1 Daily trading for total book trading



Source: LSE LMIL feed, author

Bar Chart 4.2 is fifty leading companies' total market capitalization. We can see it clearly that total market capitalization plunged in 2002 and then increased slowly until 2007. In 2002, Dot-com Bubble happened. That is the reason why market capitalization decreased sharply.

Bar Chart 4.2 Fifty Leading Companies' Total Market Capitalization



Source: LSE data, author

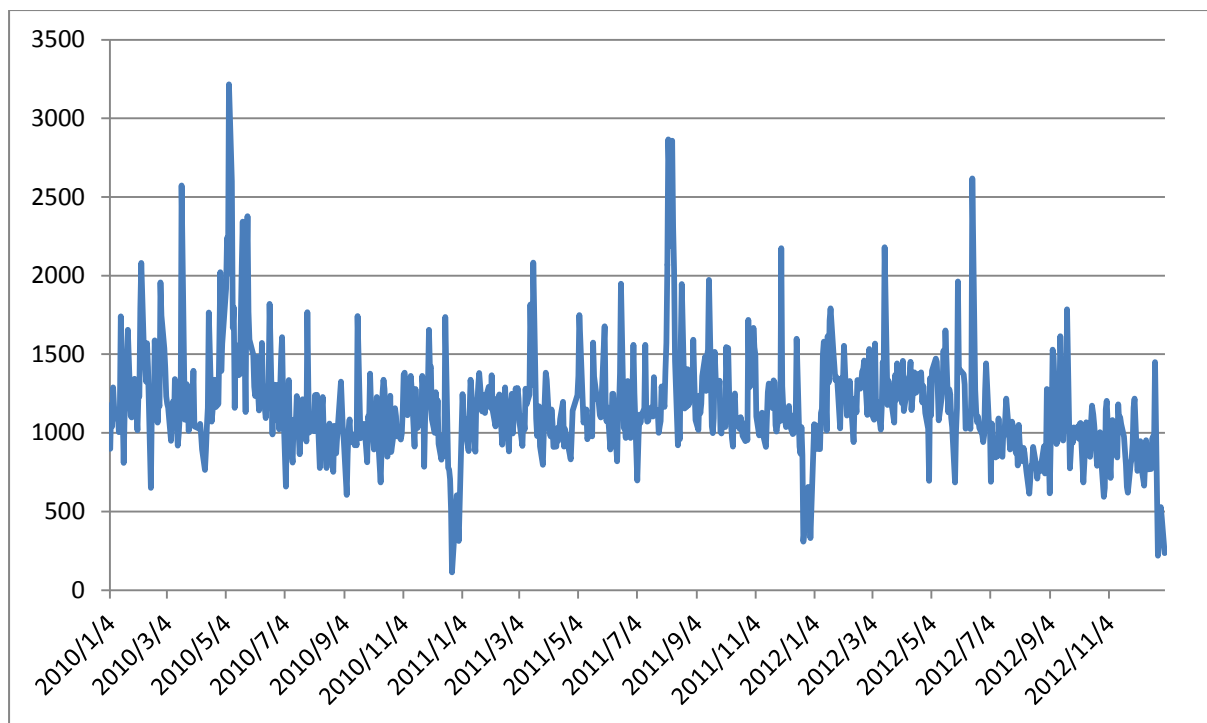
4.3 Securities in London Stock Exchange

LSE as one of the world's largest stock exchange provides all kinds of products for traders and brokers, such as stocks, bonds, ETFs, covered warrants and so on. These various investments are one of the key factors to investing in LSE.

4.3.1 Stocks

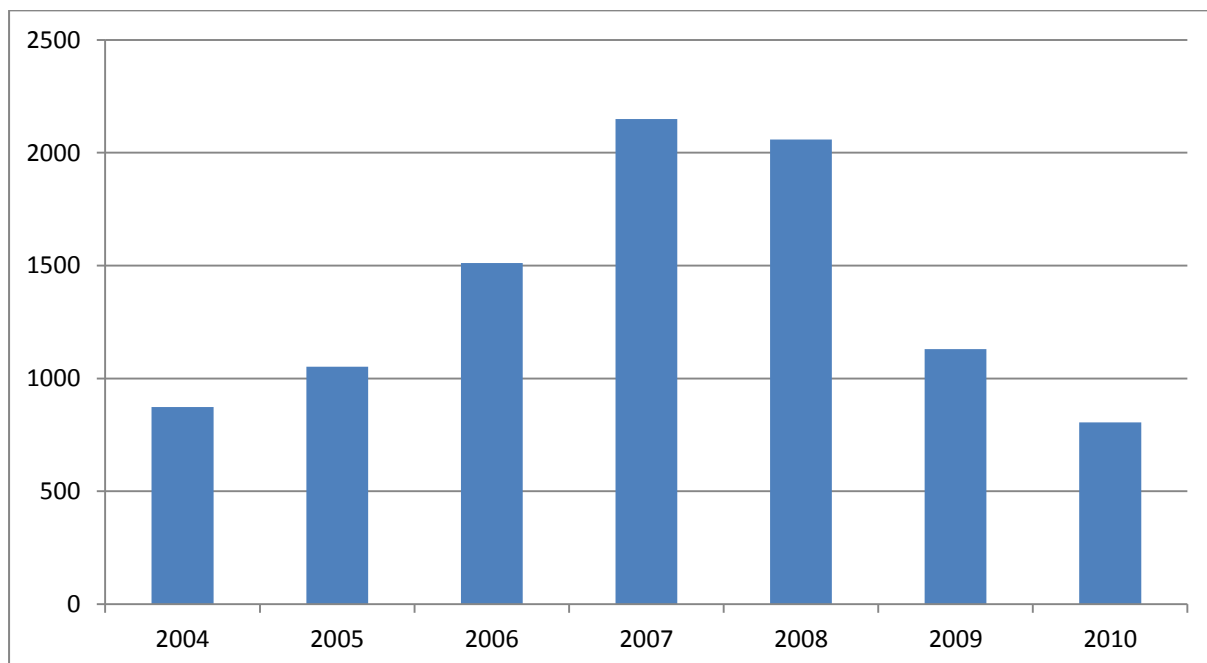
Curve Graph 4.2 is daily LSE trading shares; we find it has a trend of slowly decreasing. It is similar to the daily NYSE trading shares. Bar Chart 4.3 is shares electronic turnover takes account the main part of the total share turnover. After Subprime Crisis, it plunged to a very low level.

Curve Graph 4.2 Daily LSE shares (million)



Source: LSE data, author

Bar Chart 4.3 Shares Electronic Turnover (£Billion)

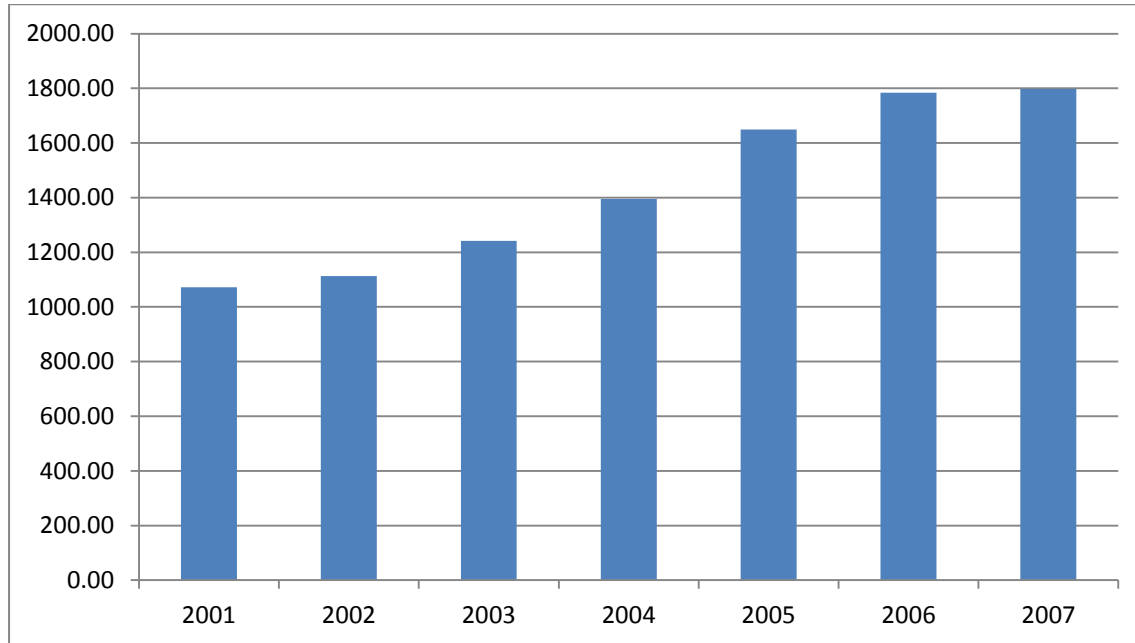


Source: World Exchanges of Federation data, author

4.3.2 Bonds

The LSE is a global center for bond market. It is also one of the global centers for the listing of Eurobonds. Today, over 75% of all Eurobond are traded in LSE. All debt in LSE includes bonds is listed either on Main Market or Professional Securities Market.

Bar Chart 4.4 Bond Value of Trading (£billion)

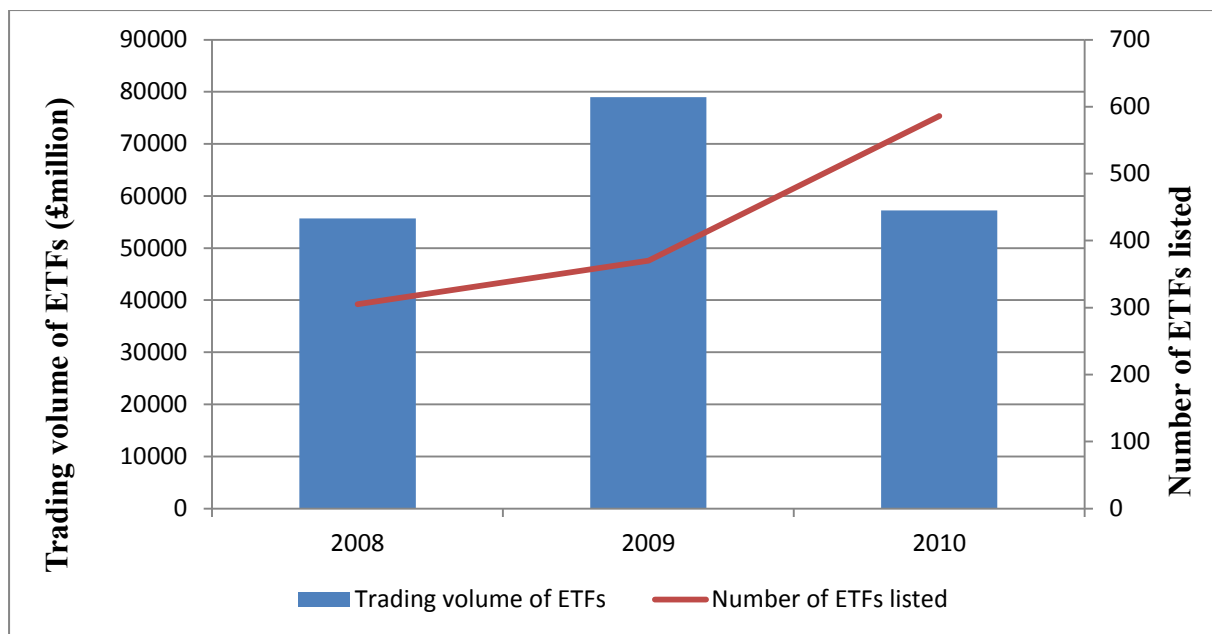


Source: World Exchanges of Federation data, author

4.4.3 ETFs

ETFs listings develop very quickly in the LSE from 2008 to 2010. In 2008, there are 305 ETFs listings. However, in 2010, there are 586 ETFs listings which are twice as many listings as in 2008. Trading volume increased quickly in 2009. It also decreased quickly in 2010. The trading volume in 2010 is almost the same as it in 2008.

Bar Chart 4.5 Trading Volume of ETFs (£million) and ETFs listings



Source: World Exchanges of Federation data, author

4.4 IPO

The market of the LSE has 4 different markets. Companies can decide to enter one of them according to companies' size, growth objectives and funding needs. The Main Market is for bigger and established companies. It is a planet for the world's largest and famous companies. AIM which is an abbreviation of Alternative Investment Market is a market for smaller, start-ups companies. It is the world's most successful growth market. Actually not only do smaller, start-ups companies choose AIM; many well-established, mature organizations also choose AIM. Professional Securities Market is exchange-regulated market trading listed depositary receipts and debt. It is targeted at professional investors. Specialist Fund Market is a specialized market for issuers of specialist funds. This market offers specialist investment managers a flexible and convenient approach to permanent capital from a high complicated global investor base.²⁷ Even though LSE is only the third largest exchange in the world not like NYSE which is the largest

²⁷ Source: London Stock Exchange website "choosing a market".

Link: <http://www.londonstockexchange.com/companies-and-advisors/listing/markets/markets.htm>

exchange in the world, it also set a series of strict requirement for those companies who want to list on LSE.

4.4.1 Listing Requirement

It is very hard to tell each market's requirement so I choose the Main Market to detail its listing requirements. There is two-stage process accessing to the Main Market for a company. The first step is getting the admission of company's shares to the official list of the FSA (the 'Official List') by UK Listing Authority ('UKLA'). The second step is getting the permission of the Exchange.

UKLA eligibility requirements²⁸

Listing Rules requirement

- The shares must be traded freely without any liens or restrictions. A company has no excuse on usual selling restrictions imposed on investors when the company offers the shares. The same as contractual lock-up arrangement.
- A company agrees to be incorporated when it happens and must obey all necessary related rules.
- All the same class shares wanting to be listed must be listed. And the minimum market capitalization is 700,000GBP.
- A prospectus about shares must be agreed by the FSA (or by another EEA state competent authority and passported into the UK) and published.

'Free-float' requirement

At least 25 per cent of the all class of shares must be held by 'the public' by the time of listing.²⁹

²⁸ Source: *Guide of listing on the London Stock Exchange*

²⁹ This rule is not so strict. For example a company has a very huge market capitalization. And a smaller proportion of shares still make a sufficient liquid in the stock. Because the goal of this rule is to ensure there are enough smaller and non-company-related shareholders in the market to operate properly.

LSE eligibility requirements³⁰

- A company meets the requirements of the securities regulators by which it is regulated, that is some regulator like FSA and other home state regulators. The company also has to meet the requirements of any other stock exchange on which it has securities for trading.
- Trading of shares must be fair and in an orderly and efficient manner. And electronic settlement is available for investors who buy shares.
- A company must publish a prospectus before its securities are allowed to be listed and traded on the Main Market.

4.4.2 Listed Companies

Table 4.1 Listing Companies

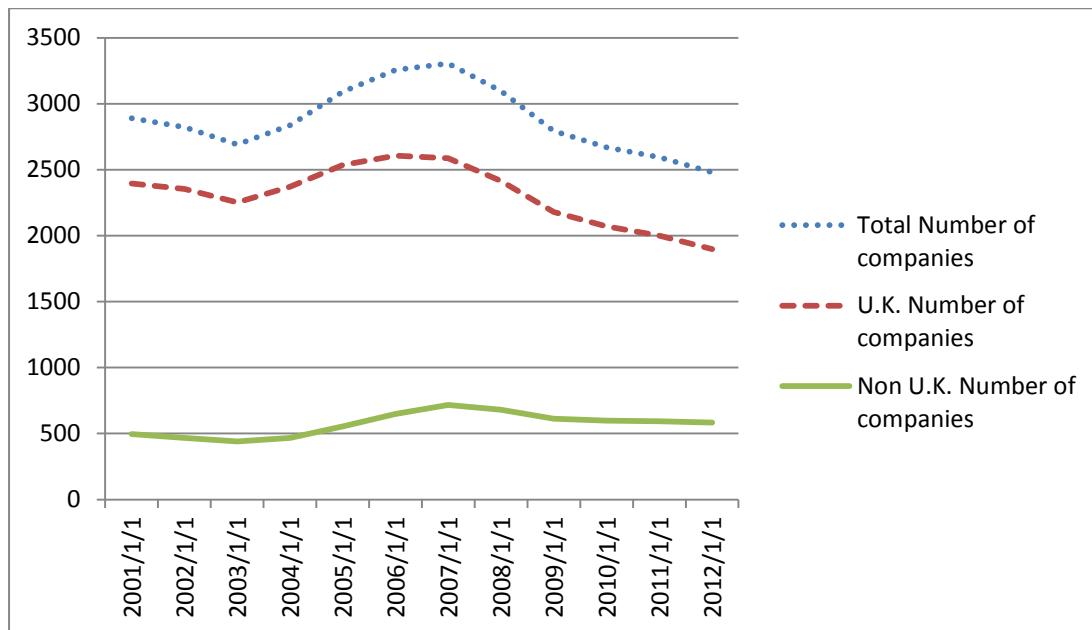
	Total Number of companies	UK. Number of companies	Non UK Number of companies
2001/12/31	2891	2396	495
2002/12/31	2823	2355	468
2003/12/31	2692	2251	441
2004/12/31	2837	2370	467
2005/12/31	3091	2537	554
2006/12/31	3256	2607	649
2007/12/31	3305	2588	717
2008/12/31	3095	2415	680
2009/12/31	2792	2179	613
2010/12/31	2670	2071	599
2011/12/31	2594	2001	593
2012/12/31	2480	1897	583

Source: Adapted from London Stock Exchange and I tabulate it.

From the table 4.1, we can see the number of listed companies whether UK companies or Non UK increased from 2003 and reached the peak in 2007. After that year, the number of companies began to decrease. It indicates that many companies chose to list from 2003 to 2007. And many companies delisted from 2007. It shows that many companies are hit by the Subprime Crisis whether UK companies or Non UK companies. And Curve Graph 4.3 is more intuitive for us to know these changes.

³⁰ Source: *Guide of listing on the London Stock Exchange*

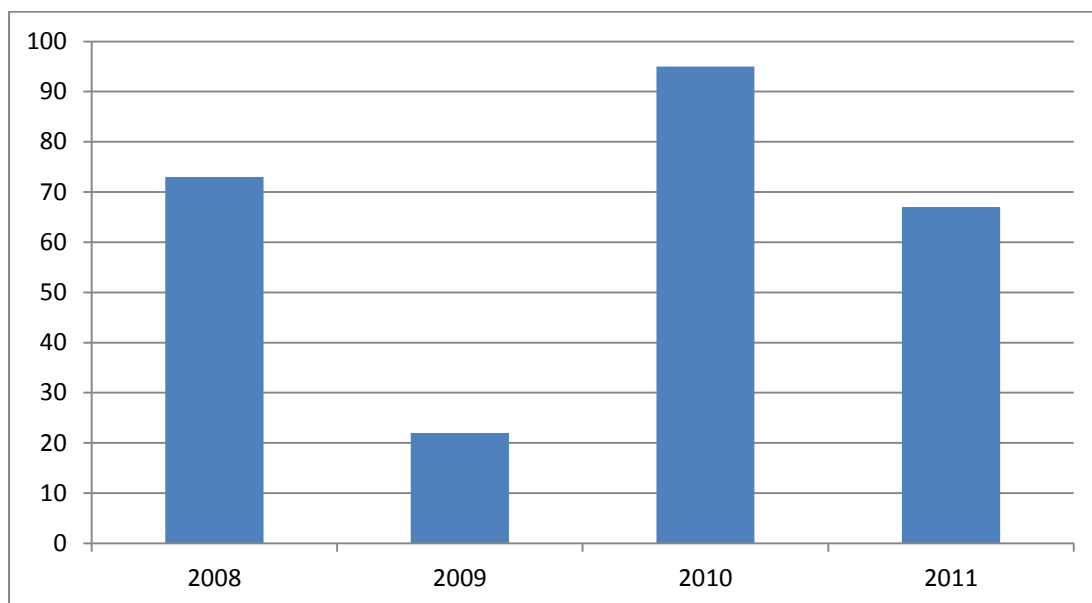
Curve graph 4.3 Numbers of Listed Companies



Source: LSE data, author

Bar Chart 4.5 is the number of IPOs listings in the LSE. Seeing this bar chart, it seems that the global financial crisis is transitory to IPOs market in the LSE. After decreasing in 2009, it recovered in 2010. And it is beyond the level of 2008.

Bar Chart 4.6 IPOs



Source: London Stock Exchange IPO 2011 report

During the global financial crisis, the number of IPOs plunged. But it recovered quickly. And from this bar chart, we can see IPOs listings are unstable.

4.5 Index in LSE

Like NYSE Euronext, LSE also has many different kinds of indices, such as Global Equity Indices, Regional & Partner Indices. As for UK Index series (See Annex 2), it has FSTE 100 Index, FTSE 250 Index, and FSTE All-Share Index. The FTSE UK Index series are about the performance of UK companies. These indices can help investors to get a comprehensive understanding of the performance of all capital and industry segments of the UK equity market. All FTSE equity index constituents use free float adjusted method. It can reflect the actual stocks in the market for public investment.

*FTSE All-Share Index*³¹ contains all companies listed on the LSE's main market. It covers 630 companies. The total value of these companies is nearly £1.8 trillion in 30 June, 2011 about 98-99% of UK market capitalization. It accounts for 10% of the world's equity market capitalization. It is the aggregation of the FTSE 100, FTSE 250 and FTSE Small Cap Indices. The index is used as a benchmark for investment products, such as funds and EFFs.

*FTSE 100 Index*³² is one the most recognized indices in the world. It represents 7.8% of the world's equity market capitalization. It is composed of top100 highly capitalized blue chip companies listed on LSE. It is widely used by investors as a benchmark for investing products, such as derivatives and exchange-traded funds. The index stands for 85.2% of the UK's market.

The *FTSE 250* comprises mid-capitalized companies from the 101st to the 250th largest companies on the LSE. It represents approximately 15% of UK market capitalization.

31 <http://www.ftse.com>

32 Source: <http://www.ftse.com>

Chart 4.1 FSTE All-Share Index



Source: Yahoo Finance

Chart 4.2 FSTE 100 Index



Source: Yahoo Finance

Chart 4.3 FTSE 250 Index



Source: Yahoo Finance

4.6 Regulation and Supervision in LSE

Like NYSE, the Exchange also has set a relatively thorough system for the regulation of securities market and market participants. One of significant reason why investors, issuers and intermediaries choose the Exchange's markets is that the Exchange provides an efficient and well. And the Exchange itself also set out a series of rules to regulate issuers, intermediaries and investors to make an orderly market.

The supervision of Financial Services Authority (FSA)

The Exchange is a Recognized Investment Exchange (RIE). As a RIE, The Exchange has to meet the requirements offered by Financial Services Authority's RIE and RCH Sourcebook. This kind of recognition gives exchanges an exemption from the need to be authorized to do regulated activities in the United Kingdom. The FCA has the right to recognize and supervise RIEs and these rights are under the control of the Financial Services and Markets Act 2000 (FSMA)

Rulebook

The Exchange has published the Rules of the LSE ("the rules"). All LSE member firms have to meet the requirements stated on the rules. For the explanation of Markets in Financial Instruments Directive ("MiFID" or "the Directive"), which is amending regulation providing harmonized regulation to increase competition and consumer protection in investment services.

5 Comparison of the selected Stock Exchanges

NYSE and LSE are two world-class stock exchanges. And they are main competitors to each other.

5.1 History

NYSE was set up with the specific aim. However LSE was set up due to an accident. NYSE began when 24 stockbrokers sign the Buttonwood Agreement that would establish the rules for buying and selling bonds and shares of companies on May 17, 1792. LSE began when stockbrokers were expelled from the Royal Exchange due to their rude manners. So they had to execute orders in another place.

There are some reasons that these two exchanges can be world-class stock exchange. Internal causes are that strict regulation on listings standards and continued listings standards; transparent operation; timely information disclosure; and low transaction fee. External causes are good business environment, a lot of professionals and so on.

NYSE locates in New York which is the biggest international financial center. In 2012, New York ranked the first on *Global Economic Power Index* published by The Atlantic. It shows that New York is recognized as an international financial center by people. LSE sites in London which ranks the first of the list of economic power according to data from MasterCard. The ranking was published by Forbes.com. Forbes.com ranks the list according to growth and quality of these firms instead of size.

America has a lot of well-known universities which are good at business in the world. These universities output many talented people who know the world of finance to New York, to NYSE. UK also has a lot of well-known business schools in the world. These business schools create many excellent financial workers for LSE.

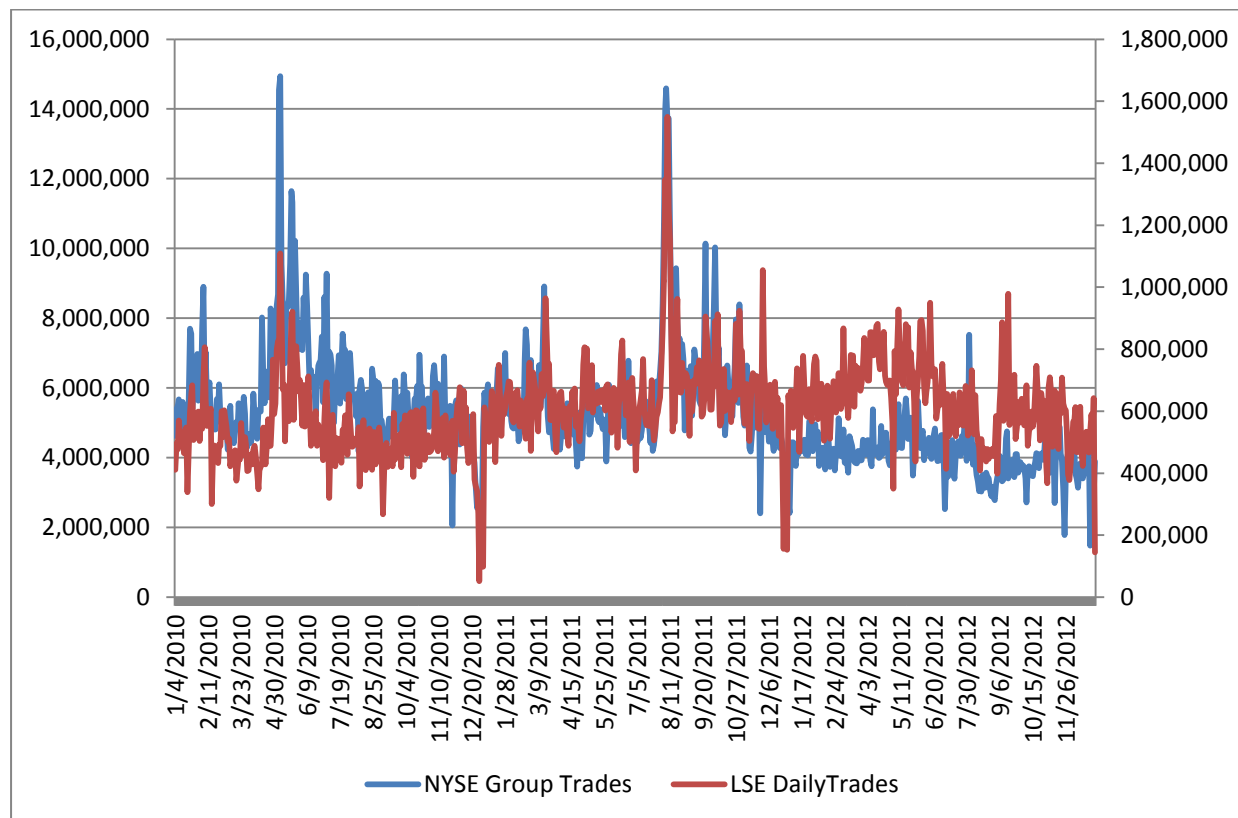
5.2 Trading

Trading is best summary for everyday operation in stock exchanges. Any activity cannot exist without trading. So trading is extremely important for stock exchanges.

5.2.1 Trading System

Considering the importance of trading, trading system is important to attracting traders. Both exchanges recent years have changed their trading system to improve the speed and the quality of trading to attract more traders and companies. NYSE has implemented Super Display Book System (SDBK) for processing orders. It makes trades executions and report within five milliseconds. LES also switched its trading platform into Millennium system at the beginning of 2011. The curve graph below is daily trades in NYSE and LSE. Even though trading system is important, realistic market situation is more important. It is core factor that effect everyday transaction. In the Curve Graph 5.1, we can see daily trades decreasing over 2012 in two exchanges.

Curve Graph 5.1 Daily Trades



Source: NYSE and LSE data, author

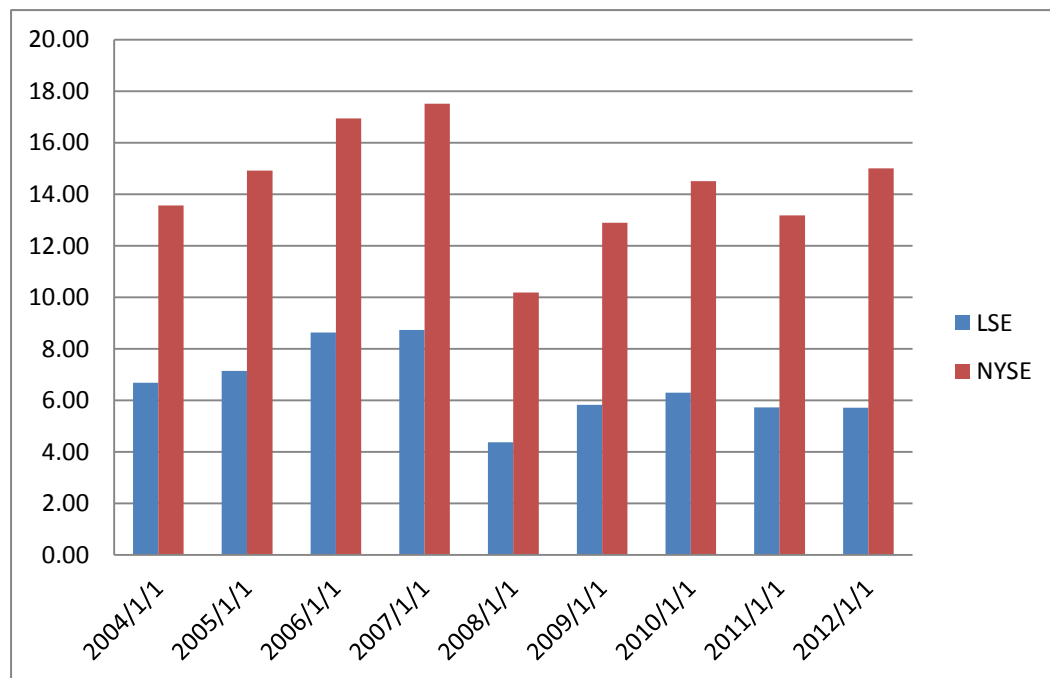
5.3 Number of listed companies and market capitalization

Both exchanges are best exchanges in the world. A lot of companies want to list on these two exchanges even though high listing requirements in both exchanges.

DJIA which is U.S market's benchmark index contains 30 stocks and only 3 stocks in DJIA are not in NYSE. It tells something.

Total value of main market in LSE is nearly £1.8 trillion in 20 June, 2011(which we mentioned in FTSE All-Share Index). It accounts for 10% of the world's equity market capitalization. From the proportion of world's equity market capitalization, we can see NYSE is much bigger than LSE. Through Bar Chart 5.1 we can see this difference obviously. (In Bar Chart 5.1 market capitalization for the LSE is the total market capitalization rather than main market capitalization)

Bar Chart 5.1 Market Capitalization (\$trillion)

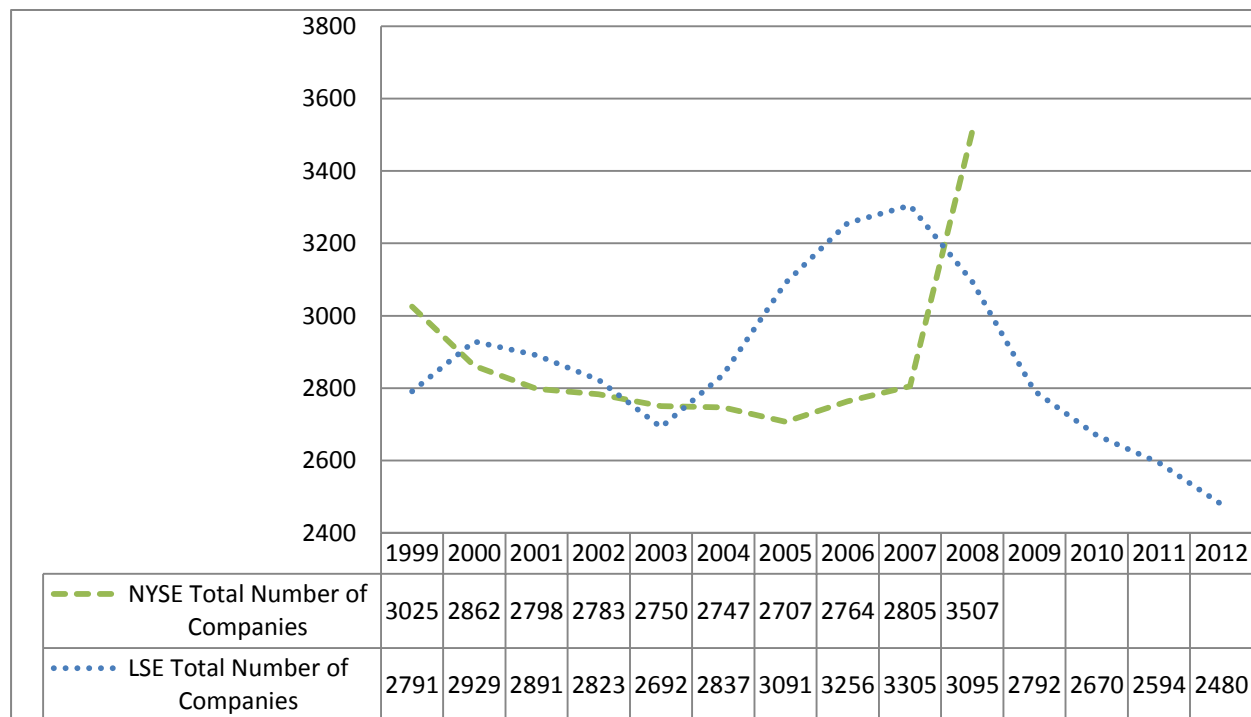


Source: NYSE and LSE data, author

In this bar chart, market capitalization of LSE is changed into the unit of US dollar according to exchange rate published by Board of Governors of the Federal Reserve System. However, even though we change market capitalization of LSE whose unit is pound into the equal amount of money which is calculated in dollar. NYSE still has an absolutely advantage over LSE in terms of market capitalization. It proves that NYSE is the largest stock exchange in the world in terms of market capitalization. The figure also reflects is that American Subprime Crisis is a big hit to NYSE. Four years goes by, NYSE gradually recover from the Subprime Crisis. But it still can't reach the pre-crisis level in 2012. It is until the end of 2011, the total market capitalization reaches the level of 2005. Of course, LSE is also affected in this crisis. But the effect to LSE is not as big as it is to NYSE. Subprime Crisis began in 2008. After 2008, market capitalization of the LSE started to slowly increase.

Another question to this bar chart is that why so huge gap exists between market capitalizations of two exchanges. It may result from the huge gap in the number of listed companies on two exchanges.

Curve Graph 5.2 Numbers of Listed Companies



Source: NYSE and LSE data, author (the statistics from 2009 to 2012 is not available in the NYSE)

Seeing the Curve Graph 5.2, 3507 companies are listed on the NYSE at the end of 2008. In the LSE, there were 3059 companies listed in the same year. From these two statistics we can see there is no big huge gap in the number of listed companies. So the number of listed companies is not a reason that results in huge gap.

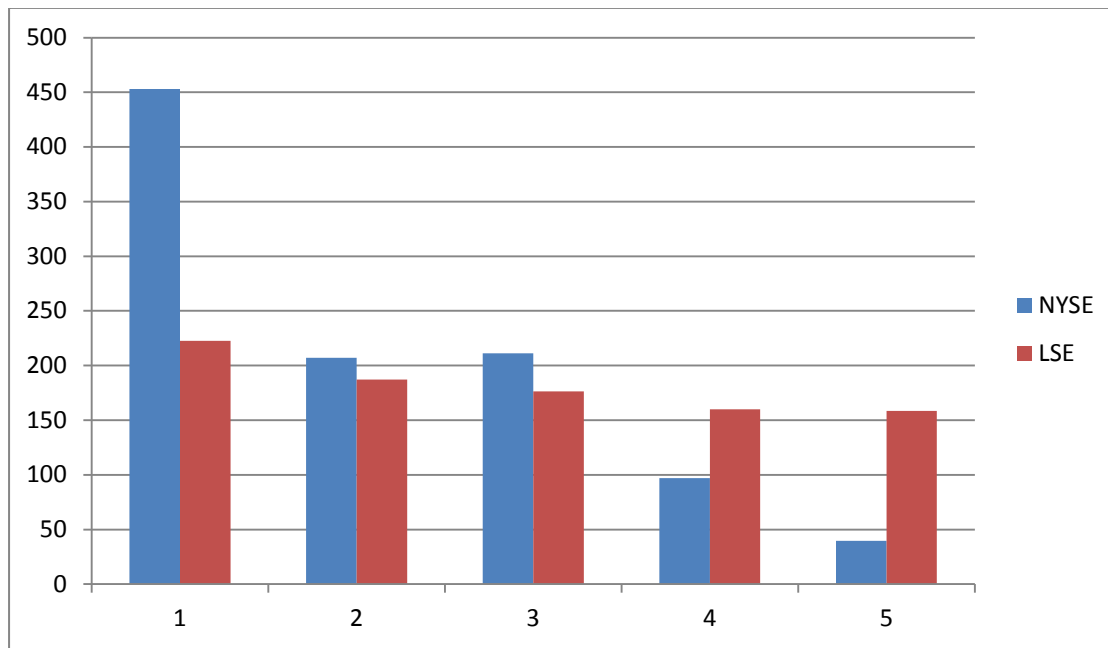
From the Curve Graph 5.2, we can see, the number of listed companies in both exchanges is a little different. Generally, NYSE has more listed companies than LSE before the year 2008. We can see it clearly through two curves. After the year 2008, the total number of listed companies sharply decreased in the LSE. It is American Subprime Crisis that resulted in this big change to LSE listed companies. Because of the crisis, financial institutions have been hit on a large scale. Now we can't get the statistics about the number of total listed companies in NYSE. But it is no doubt that Subprime Crisis originating for America has a very great influence on listed companies in NYSE. And many companies delisted at that time.

So each company's market capitalization makes a difference. Some statistics show that 7 of Fortune of Top 10 Global Admired are listed on NYSE. Over four hundred companies in Fortune 500 companies are listed on NYSE. (Haiying Zhang, 2012) It told us something. Bar Chart 5.2 makes it more persuasive. Table 5.1 is Top 5 companies' names. **Table 5.1 Top 5 companies' names**

Rank	Companies' name	
1	Exxon Mobil	ROYAL DUTCH SHELL
2	Wal-Mart Stores	GENERAL ELECTRIC CO.
3	Chevron	JPMORGAN CHASE & CO
4	ConocoPhillips	HSBC HLDGS
5	General Motors	TOYOTA MOTOR CORP

Source: LSE and Fortune, author (March 29, 2012)

Bar Chart 5.2 Market Capitalization of Top 5 Companies in Both Exchanges (\$billion)



Source: LSE and Fortune, author (March 29, 2012)

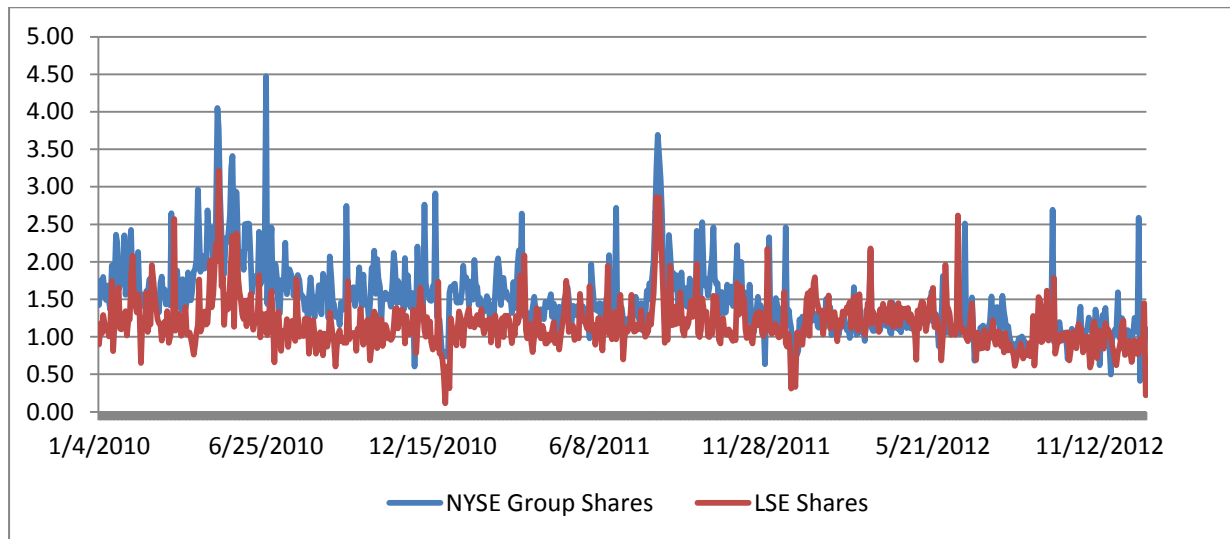
5.4 Securities Products

NYSE or LSE are important parts of financial markets. They afford trading platform for investors, specialists, and issuers to trade equities, bonds and derivatives.

5.4.1 Stock

Stock is basic securities in stock exchanges. Curve Graph 5.3 is daily stock shares in both exchanges. Seeing the curve graph, daily stock volume is slowly decreasing over these years. On the one hand, the curve graph below tells us that every day's stock volume is very huge in both stock exchanges. Generally daily stock shares in NYSE Group are bigger than LSE before 2012. In 2012, they are almost in the same level. On the other hand, we can see both daily stock volumes have high volatility. For example on June 18, 2010, daily NYSE Group shares are about 1821 million. However, after one week, they reached 4474 million. It is more than twice as much volume as in June 18, 2010.

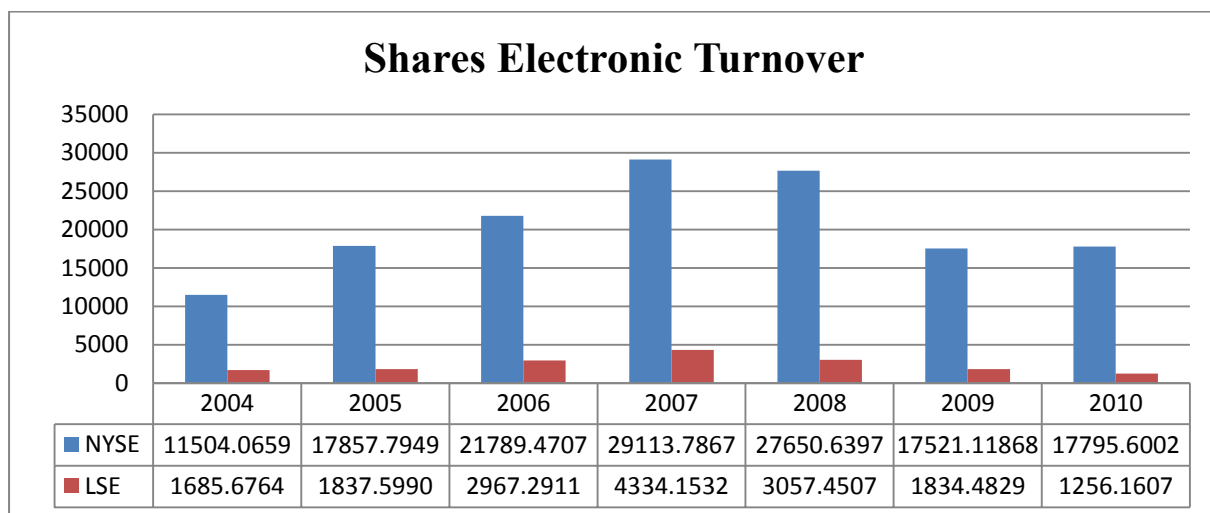
Curve Graph 5.3 Comparison of Daily Stock Shares (billion)



Source: NYSE and LSE data, author

We have mentioned that trading value is split into three categories: electronic order book, negotiated deals, and reported trades according to the facility used to execute the trading operation in chapter 2. Among these three share trading value; electronic turnover is the main part. From the Bar Chart 5.3 we can see each year's share electronic turnover in NYSE is more than 10 times as much as in LSE. Both exchanges' share electronic turnover increased before 2007. 2007 is a turning point for both exchanges. What's different is that after 2009, share electronic turnover began to increase in the NYSE. However it is not seen in LSE.

Bar Chart 5.3 Comparison of Share Electronic Turnover (\$billion)



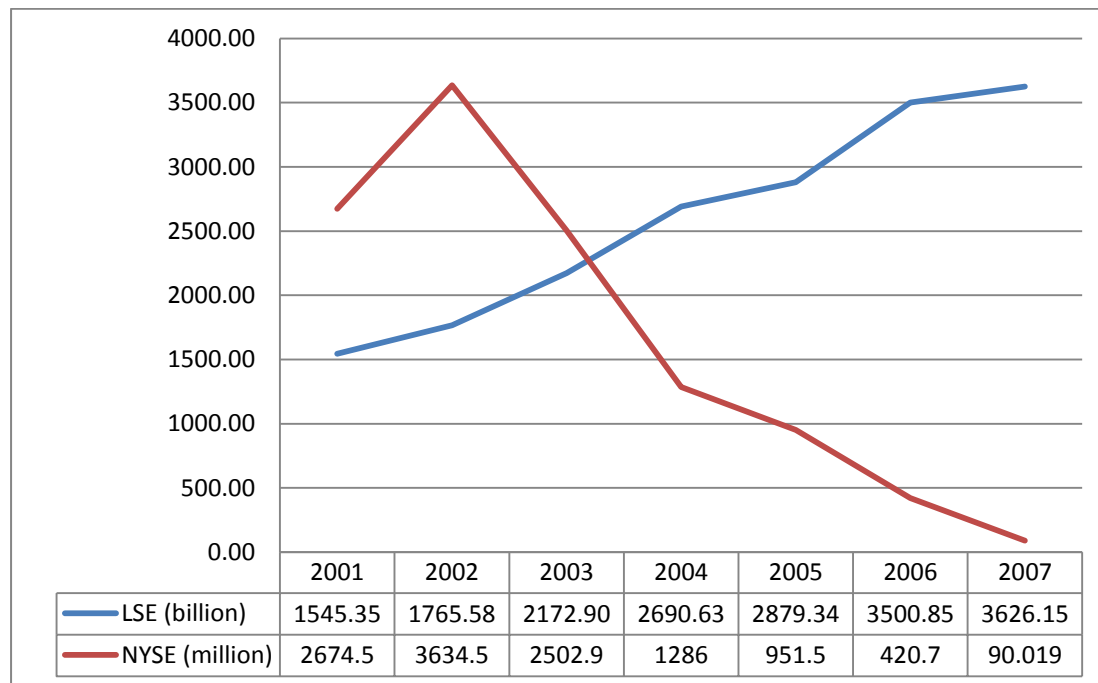
Source: World Exchanges of Federation data, author

5.4.2 Bond

Besides stock, bond is another basic security in stock exchange. The value of bond trading is the total number of bond shares traded multiplied by their respective matching prices.

In NYSE, bond trading value surges from 2001 to 2002. But after the year 2002, bond trading value began plunging. In LSE, bond trading value keeps increasing from 2001 to 2007. However, compared to the NYSE, the change in LSE is much smaller. Before 2004, bond value of trading in the NYSE is bigger than it in the LSE. After 2004, the LSE has more value of trading than the NYSE.

Curve graph 5.4 Comparison of Bond Value of Trading



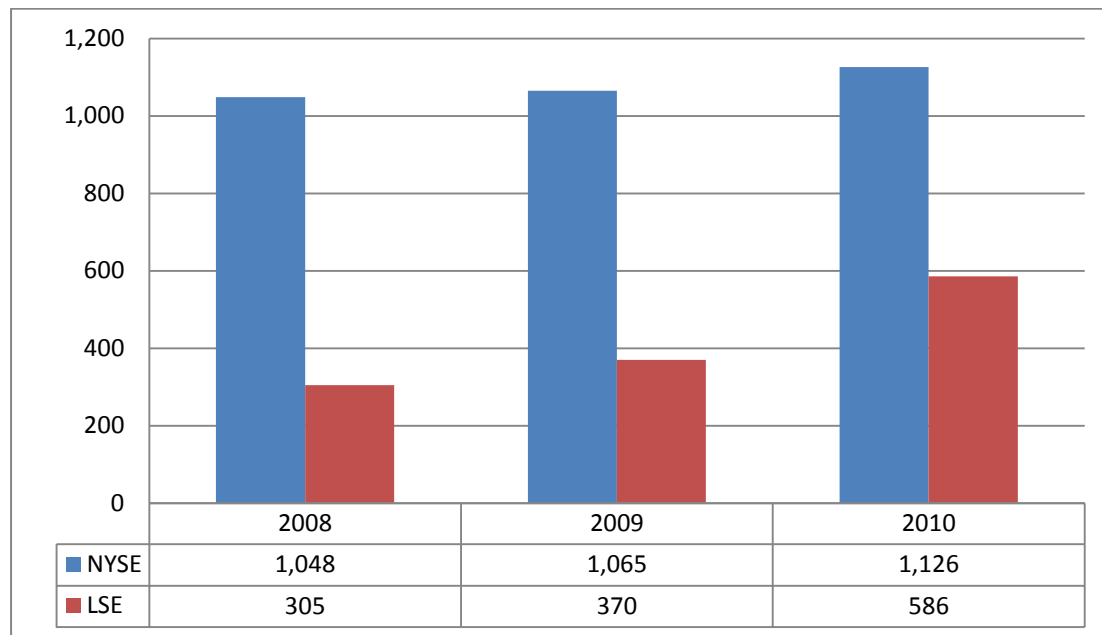
Source: World Exchanges of Federation data, author

5.4.3 ETFs

ETFs is a relatively new securities compared to stocks and bonds. The NYSE is a world leader in ETF trading. Compared to the NYSE, the LSE is obvious not good at TTFs in terms of ETF listings. From Bar Chart 5.4, we can see there are over 1000 primary ETF listings in the NYSE. However, there are only several hundred ETFs in LSE. Over three years, the number of

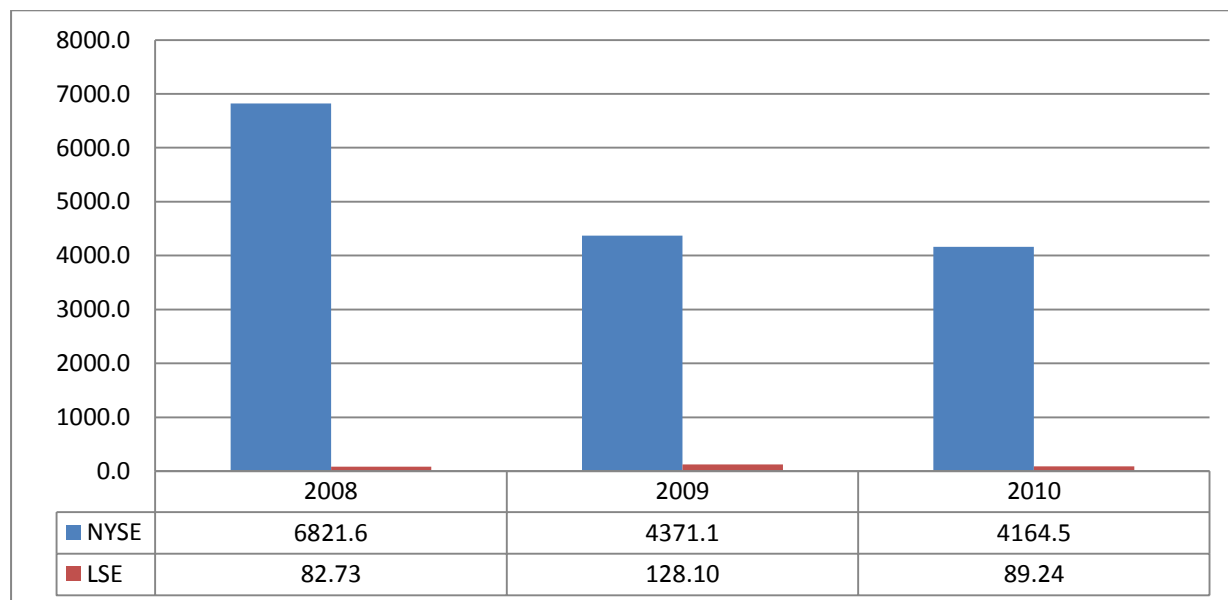
ETF listings keeps increasing in both exchanges. Opposite to this increasing trend in listings, trading volume of ETFs keeps big decreasing over these three years in the NYSE. In the LSE, trading volume has a small increase in 2009. After this small increase, trading volume began to decrease.

Bar Chart 5.4 Comparison of Number of ETFs Listed



Source: World Exchanges of Federation data, author

Bar Chart 5.5 Comparison of Trading Volume of ETFs (\$billion)



Source: World Exchanges of Federation data, author

5.5 IPO

The global financial crisis did not just affect stock markets, bond markets and ETF markets; it affected the global IPO markets as well. The number of companies listing on exchanges decreased during and after the crisis. In 2007, there was a total of 2014 IPOs listing globally that raised USE 295 billion. But this had reduced to 179 raising just USE 96 billion by 2008. Although the global IPO has not yet returned to pre-crisis levels, it has made a strong recovery. In 2010, 1393 IPOs listed globally raising USD 284.6 billion.³³ Table below is about IPO listed on 4 biggest exchanges in the world and proportion of IPOs executed.

Table 5.2 Comparison of Major Stock Exchanges' IPOs

	LSE		NYSE		HKEx		Frankfurt	
Year	listed	withdrawn	listed	withdrawn	listed	withdrawn	listed	withdrawn
2008	73	11	20	24	27	15	8	6
2009	22	1	44	23	58	3	5	3
2010	95	19	99	34	77	13	17	5
2011	67	12	68	29	44	12	12	4
total	257	43	231	110	206	43	42	18

Source: London stock exchange

From these numbers, we can see the LSE is a global leader in IPOs. From 2008 to 2011, there are 257 IPOs listed on the LSE. Its main competitor NYSE has only 231 IPOs. As to HKEx and Frankfurt, their IPOs are less. Another striking finding is that London has a relatively low rate of withdrawn IPOs. Over the last four years, the LSE has 14.3 per cent of IPOs being withdrawn. At the same time NYSE has 32.3 per cent, HKEx has 17.3 per cent and Frankfurt has 30 per cent.

5.6 Summary

Both exchanges have a long history. In fact, the history of LSE is 100 years longer than NYSE. But success is none of the business of existing years. Now, NYSE has a much bigger

33 Source: London Stock Exchange IPO report 2011 *Leadership in a changing global economy*

scale than LSE, especially after 2007 when it merges with Euronext N.V to create the NYSE Euronext Holding Corporation.

There is huge gap between two exchanges in market capitalization. After the analysis, we get the result that the huge gap comes from individual companies' market capitalization. And the number of listed companies has little influence on it. So if the LSE wants to improve its market capitalization, there are two approaches. One is to attract more companies with high market capitalization. Another is to increase the number of listed companies. Both of them are very difficult to achieve. But, the second one is more difficult since it is an external factor which the LSE can't control. As for the first one, the LSE can improve itself to attract high market capitalization companies. To attract more traders, both exchanges have changed their trading system to the better ones which can save trading time and reduce the failure. The more important is that new trading system can help them attract traders.

Securities' trading scale in NYSE is much bigger than in LSE. And the global crisis has an influence on securities not only in the NYSE as well as in the LSE. Stock shares electronic turnover has gone through a big hit during the crisis. And they had not returned to pre-crisis level after two years for both exchanges. Bond volume of trading in NYSE keep decreasing during years from 2002-2007. Since there is no access to get statistics after 2010, we don't know whether the situation of bond market gets better. However, we can see a continued increase in the LSE on bond volume of trading. Even though the increase is slow. And after 2004, bond trading scale in LSE is bigger than NYSE. It is the only security among these securities which has better trading scale than NYSE. EFTs is the similar situation. Trading volume of EFTs decreases during financial crisis in NYSE. In the LSE, after one year's decrease, it rebounded in 2009. But after 2009, it decreased again. However, the ETFs listings increase in two exchanges during financial crisis.

As to IPOs, the LSE is a global leader in IPOs. The number of IPOs listings from 2008 to 2011 is bigger than the NYSE. And the proportion of withdrawn IPOs is lower than it is in the NYSE.

From the analysis, we find market capitalization of each company is a disadvantage for the LSE. The LSE has to do something to attract high market capitalization companies. And it

should learn from the NYSE. Compared to the NYSE, the LSE does better in bond market. This is an advantage for the LSE. In 2010, the LSE launched the electronic Order book for Retail Bonds (ORB). And the LSE afford retail investors an access to an on-screen secondary market in fixed income securities. If the NYSE wants to improve the turnover of bond market, it will learn from the LSE. These years, stock market is unstable, retail investors preform fixed income. For them, the LSE is a good choice.

6 Conclusion

Exchanges as intermediaries play key roles in financial markets. Therefore the objective of this thesis was comparison of the most important stock exchanges in the world – New York Stock Exchange and London Stock Exchange.

The NYSE is a well-performance stock exchange. It has a long history. Correspondingly, it has a relatively mature trading mechanism than many other stock exchanges in the world. The NYSE attracts a lot of world-class companies. These companies choose NYSE to list their securities even the NYSE is a highly regulated stock exchange and a high demanding exchange. It has different strict standards for U.S. companies and Non-U.S. companies. However, these strict rules don't prevent companies' resolution to be listed in the NYSE. Now there are about 3000 companies listed in the NYSE.

The LSE is also a well-performance stock exchange. It has a longer history than the NYSE. The LSE is also a well-regulated market. Its regulation and supervision is strict like the NYSE. It is the third largest stock exchange in the world in terms of market capitalization, while the NYSE is the biggest world exchange in this aspect. To compete with the NYSE, the LSE still needs to do something to attract world-class companies.

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List of Abbreviations

ABS: Automated Bond System

CSRC: China Securities Regulatory Commission

DJIA: Dow Jones Industrial Average

EOB: Electronic order book

EQS: European Quoting Service

ETFs: Exchange Traded Funds

ETPs: Exchange Traded Products

LSE: London Stock Exchange

MiFID: Markets in Financial Instruments Directive

NYSE: New York Stock Exchange

RIE: Recognized Investment Exchange

SDBK: Super Display Book System

SESTA: Swiss Federal Act on Stock Exchanges and Securities Trading

SETS: Stock Exchange Electronic Trading Service

SETSqx: Stock Exchange Electronic Trading Service – quotes and crosses

SFC: Securities and Futures Commission

SSE: Shanghai Stock Exchange

S&P: Standard & Poor's 500 Index

TRF: Trade Reporting Facility

UKLA: UK Listing Authority

Declaration of Utilization of Results from a Diploma (Bachelor) Thesis

Herewith I declare that

- I am informed that Act No. 121/2000 Coll. – the Copyright Act, in particular, Section 35 – Utilization of the Work as a Part of Civil and Religious Ceremonies, as a Part of School Performances and the Utilization of a School Work – and Section 60 – School Work, fully applies to my diploma (bachelor) thesis;
- I take account of the VSB – Technical University of Ostrava (hereinafter as VSB-TUO) having the right to utilize the diploma (bachelor) thesis (under Section 35(3)) unprofitably and for own use ;
- I agree that the diploma (bachelor) thesis shall be archived in the electronic form in VSB-TUO's Central Library and one copy shall be kept by the supervisor of the diploma (bachelor) thesis. I agree that the bibliographic information about the diploma (bachelor) thesis shall be published in VSB-TUO's information system;
- It was agreed that, in case of VSB-TUO's interest, I shall enter into a license agreement with VSB-TUO, granting the authorization to utilize the work in the scope of Section 12(4) of the Copyright Act;
- It was agreed that I may utilize my work, the diploma (bachelor) thesis, or provide a license to utilize it only with the consent of VSB-TUO, which is entitled, in such a case, to claim an adequate contribution from me to cover the cost expended by VSB-TUO for producing the work (up to its real amount).

Ostrava dated...07.05.2013....

.....Cheng Tian 田成.....

Student's name and surname

List of Annexes

Annex 1 Domestic listing requirement

Annex 2 UK Index series

Annex 1

Domestic listing standards

(a) The number of beneficial holders of stock held in "street name" will be considered in addition to the holders of record. The Exchange will make any necessary check of such holdings that are in the name of Exchange member organizations.

(b) In connection with initial public offerings, spin-offs and carve-outs the NYSE will accept an undertaking from the company's underwriter to ensure that the offering will meet or exceed the NYSE's standards.

Distribution & Size Criteria	
<i>Must meet all 3 of the following:</i>	
Round-lot Holders ^(a)	400 U.S.
Public Shares ^(b)	1,100,000 outstanding
Market Value of Public Shares ^(b,c) :	\$40 million
IPOs, Spin-offs, Carve-outs, Affiliates	\$100 million
All Other Listings	
Stock Price Criteria	
All issuers must have a \$4 stock price at the time of listing	
Financial Criteria	
<i>Must meet 1 of the following standards:</i>	
Alternative #1 - Earnings Test	
Aggregate pre-tax income for the last 3 years ^(d)	\$10 million
Minimum in each of the 2 most recent years	\$2 million
Third year must be positive	
OR	
Aggregate pre-tax income for the last 3 years ^(d)	\$12 million
Minimum in the most recent year	\$5 million

Minimum in the next most recent year	\$2 million
Alternative #2a - Valuation with Cash Flow	
Global Market Capitalization ^(f)	\$500 million
Revenues (most recent 12-month period)	\$100 million
Adjusted Cash Flow:	
Aggregate for the last 3 years	\$25 million
All 3 years must be positive	
Alternative #2b - Pure Valuation with Revenues	
Global Market Capitalization ^(f)	\$750 million
Revenues (most recent fiscal year)	\$75 million
Alternative #3 - Affiliated Company	
<i>For new entities with a parent or affiliated company listed on the NYSE</i>	
Global Market Capitalization ^(f)	\$500 million
Operating History	12 months
Parent or affiliate is a listed company in good standing	
Company's parent or affiliated company retains control of the entity or is under common control with the entity	
Alternative #4 - Assets and Equity	
Global Market Capitalization ^(f)	\$150 million
Total Assets	\$75 million
Stockholders' Equity	\$50 million
REITs	
Stockholders' Equity ^(b)	\$60 million
Funds and BDCs	
Net Assets ^(b)	\$60 million

SPACs	
<i>The Exchange will consider on a case-by-case basis, the appropriateness for listing of acquisition companies with no prior operating history that conduct an initial public offering if the following criteria are met:</i>	
Proceeds held in trust upon IPO	90%
Fair Market Value of Acquisitions	80% of net assets
Aggregate Market Value	\$250 million
Market Value of Public Shares	\$200 million

(c) If a company either has a significant concentration of stock or changing market forces have adversely impacted the public market value of a company that otherwise would qualify for an Exchange listing, such that its public market value is no more than 10 percent below the minimum, the Exchange will consider stockholders' equity of \$60 million or \$100 million, as applicable, as an alternate measure of size.

(d) Pre-tax income is adjusted for various items as defined in Section 102.01C of the NYSE Listed Company Manual.

(e) Represents net cash provided by operating activities excluding the changes in working capital or in operating assets and liabilities, as adjusted for various items as defined in Section 102.01C of the NYSE Listed Company Manual.

(f) Global market capitalization for already existing public companies is represented by the most recent three months of trading history in the case of Pure Valuation with Revenues. For all other standards, the measurement is "point in time" for existing public companies. For IPOs, spin-offs and carve-outs, it is represented by the valuation of the company as represented by, in the case of a spin-off, the distribution ratio as priced, or, in the case of an IPO/carve-out, the as-priced offering in relation to the total company's capitalization.

Annex 2

UK Index series

